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P V GUPTA and S C CHATUVEDI

A Framework for Information Technology Education in India

B K SINGH and D K SINGH

Benchmarking : Striving for the Best Practice for Librarians

C R RAO

"To the Hungry, God is Bread"

–Convocation Address

IT@AGRILIBNET-2003

TRANSGENIC GREEN MOUSE AT IISc

COMMON ENTRANCE TEST FOR MCA

WORKSHOP ON CURRICULUM DEVELOPMENT

MARKETING MANAGEMENT COURSE AT IIT BOMBAY

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A Framework for Information Technology Education in India

P V Gupta and S C Chatuvedi
(Formerly with TIET Patiala and REC Kurukshetra)

Information Technology revolution started in the wake of a realisation that while managing systems and processes, time and information as resource can best be managed through automated computerised systems. This felt need of the environment led to the present proliferation of information technology in business and other disciplines. The academia and the business realised that efficiency can be enhanced by reducing the response time and cycle time of systems and processes. Information technology enabled solutions provided the necessary support in this endeavour by increasing the speed and effectiveness in the creation, storing, retrieving and distribution of information. This realisation, thus, made information technology as foundation of information age. It is worth mentioning that prior to the present proliferation of information technology, computers were mainly in use in science, engineering, technology for research and development purposes.

This realisation led to the development of applications like 'dot com', e-mail, e-commerce, e-banking, e-governance, e-supply chains, bio-informatics and many more. It is argued that 'dot com' was hype. Entrepreneurs and industry thought it was a panacea for all ills without realising that such an application of information technology only provides front-end. The back-end physical systems and processes were required to be rationalised and re-engineered consistent with the front-end technology; and, it required large growth of information and communication technology infrastructure. That did not happen across the nations. With the 'dot com' hype, universities and institutions found a new discipline and launched variety of programmes in computer education. With the melting of hype, there is a large movement of candidates from IT programmes. The process of adjustment between the hype and the reality is currently on.

Notwithstanding the burst of 'dot com' hype, time and information resources can only be managed effectively through information technology enabled solutions in the present global environment. The size and complexity of managing systems and processes at all levels (of organisations and nations) is so large that it cannot be managed effectively any more through manual systems. This realisation is still valid and will remain so in future. This fact alone will keep the growth of information technology on a steady path.

India has a pre-eminent position in the world in information technology–specially the software technology. India has expressed its intentions to become economic super power through this route. If India has to sustain its pre-eminent position in this field of knowledge, it demands a solid foundation of information technology education. In the wake of globalisation and integration of Indian economy with world economy, we will have to integrate our systems and processes with international systems and processes to remain competitive. Thus, information technology education must be planned from national as well as international perspectives. The marketing dictum will be apt in planning the framework for information technology education. "Have global vision but local execution".

Background

The Ministry of HRD (Department of Secondary and Higher Education), Government of India set up a "Task Force on Human Resource Development" in Information Technology in July 2000. This task force submitted an interim report with wide ranging recommendations. The task force recommended doubling the intake of students in information technology programmes in 2001-2002 (with base year as 1999-2000) and tripling it by 2003-2004. This was prognosticated on the basis of Ministry of information technology estimates of requirement of professionals in information technology industry as 4.37 lakh by 2008.

Government of India (under Deptt of Information Technology now Min of information technology) also set up an inter-ministerial task force "National Task Force on Information Technology and Software Development" in 1998. This task force gave 108 recommendations mainly catering for the information and communication technology infrastructure, information technology industry needs and creating legal framework. Number of recommendations of this task force have been implemented.

It is pertinent to note that accelerated growth of information technology education started since 1991 and reached the peak in 2000-2001 coinciding with Y2K and 'dot com' boom. In one decade mushrooming growth has been observed with all sorts of national and international players targeting this sector of education - with all sorts of programmes being offered. From 2002 demand started declining. The basic premise (predictions) of the two task forces has gone awry with the ground realities. The ground realities are that the buoyancy of information technology industry has retarded and demand of information technology related programmes has substantially declined within the span of two years of their reports. However, it is worth mentioning that the number of recommendations of these task forces are still valid and need to be implemented with full vigour, but to be realigned with the ground realities as in the assessment of Nasscom president things are looking bright for Indian information technology industry: "Around the year 2010, the potential of the information technology industry would be around $100 billion mark in overall revenues with over $60 billion in export revenues. The industry would employ about three million people, account for almost ten percent of India's gross domestic product (GDP) and 30 percent of India's foreign exchange inflows."-Kiran Karnik (Indian Express August 30, 2003)

But, the assessment of president of Nasscom and the reports of the task forces need to be converted into operational and measurable parameters. Such plans need to be known to all the players involved with the higher education. It is time to reassess the problems afflicted with information technology education realistically, set new premises and search for new solutions.

Aim

The aim of this paper is to analyse the current status of higher level information technology education and to develop certain suggestions at macro level for improvement of overall system.

Current Status of IT Education in India

Information Technology education in India started in 1970s through short-term programmes in several engineering colleges. Let us first analyse the major players, the programmes being offered by them and their current status.

Engineering Level Programmes

In 1995, out of 421 institutions 250 (59%) institutes were offering undergraduate (BE/BTech) level education in Computer Science and Engineering (refer Table 1). In 2000, these figures had gone up to 742 (84%) institutes out of 880.

Table 1

	1995		2000	
Region	Total No of Institutions	No of institutions offering CS&E	Total No of Institutions	No of Institutions offering CS&E
Eastern	35	17	87	72
Southern	184	131	387	375
Western	131	66	228	160
Northern	71	36	178	145
Total (All India)	**421**	**250**	**880**	**742**

Source: "Computer Science and Engineering Education in India", Anil Kumar; University News, 41(09), March 03-09, 2003.

Table 2 shows the sanctioned intake and outturn of Computer Science and Engineering graduates from 1991 to 2000. During this period outturn of CS & E graduates increased by 3.6 times (from 3467 to 12463). Sanctioned intake too increased by 6.6 times (from 7363 to 48664).

Table 2

Region	Sanctioned Intake			Outturn		
	1991	1995	2000	1991	1995	2000
Eastern	275	575	3898	138	245	769
Southern	3585	6615	25123	1877	2968	7476
Western	2943	3689	10911	1070	2079	2910
Northern	560	1328	8732	382	468	1308
Total (All India)	**7363**	**12207**	**48664**	**3467**	**5760**	**12463**

Source: "Computer Science and Engineering Education in India", Anil Kumar; University News, 41(09), March 03-09, 2003.

From the growth angle, the growth in outturn of CS & E graduates has been very high during the last decade at undergraduate level. However, the sanctioned intake too has been far in excess in comparison to outturn as shown by the gap between sanctioned intake and the outturn in each set of data. It is pertinent to note that engineering colleges are controlled by AICTE (All India Council of Technical Education) and this phenomenal growth of institutions offering CS & E programmes was registered with their approval. In numerous cases it was commercially driven expansion.

The effect has been uncontrolled dispersal of facility, lack of quality control, perceptually different nomenclature of programmes with little or no difference in contents of syllabi and non-availability of quality faculty.

Conventional University Level Programmes

To offer information technology programmes to non-science stream students of 10+2, practically every university started undergraduate level programmes like Bachelor of Information Technology (BIT), Bachelor of Computer Applications (BCA), Bachelor of Information Science (BIS), BSc (IT), BSc (Computer Science), BSc Honours (Computer Science), BSc (Software Engineering), Bachelor of Computer Aided Management (BCAM) and with many more names. Some of the universities offered four-year programmes at undergraduate level. Some of the universities made mathematics at +2 level compulsory for admission and some made every one eligible.

At postgraduate level, Indian universities have floated programmes like Three-Year Master of Computer Applications (MCA), Master of Computer Applications Software Engineering (MCASE), Master of Information Technology (MIT); Two-Year Master of Information Systems (MIS), Master of Computer Management (MCM), Master of Computer Aided Management (MCAM), MSc (IT), MSc (Computer Science), MSc (Software Engineering); One Year PGDCA, PGDIT; and with many more names. In this case too, eligibility conditions for admission vary from university to university. There is lateral entry system in MCA level programme by some universities. Number of universities are offering information technology programmes (both at postgraduate and undergraduate levels) in distance education mode with/without study centers.

It is interesting to note that while Three-Year MCA programme is controlled by the AICTE and the concerned university; all other programmes are totally designed and implemented by the universities. Universities are created either under the Parliament Act or the State Legislative Act education being in concurrent list in Indian constitution. These universities have defined geographical areas of jurisdiction. UGC exercises control on these universities. In spite of all the statutory provisions, number of universities offer these programmes beyond their areas of jurisdiction.

In 1999-2000, students went to the court against AICTE, UGC and the concerned university for non-recognition of four-year undergraduate courses like BIT/BIS. Four-year courses were withdrawn in 2001. UGC also issued directions in respect of nomenclature of programmes at undergraduate level. It resolved the problem to some extent. However, at post graduate level the confusion still prevails.

The effect is confusion in conventional university level programmes. Employers and students do not know the difference in skill sets in variety of programmes. There is no common denominator. There is a large variation in subjects and depth taught both at inter-university and intra-university levels in a programme with the same name. The institutes would charge heavy fees but very few offer well-advertised value and promises. The parents and students are in a state of utter confusion, viz.,

Which programme to opt,
What is the difference in various courses,
Whether the university and the institute offering the programme are recognised,

Whether the degree would be recognised,

Whether the programme is regular or distance education, so on and so forth.

In streets in single rooms M Tech, MCA, BCA, BSc (IT) programmes are in progress that too from different universities. A single NIIT/Aptech pass out teaches subjects like Computer Architecture, Compiler Design, Systems Programming and many more to MTech and MCA level students. Even well managed universities and institutes suffer in terms of infrastructure and quality of faculty. The Lord McCauley is still in operation.

DOEACC Run Programmes

In late 1980s a committee was set up to standardise information technology education in private sector. The recommendations of this committee led to the setting up of DOEACC (Department of Electronics and Accreditation of Computer Courses) society under Department of Electronics -now Ministry of information technology - (Govt of India). In the last decade DOEACC introduced modular approach for information technology education with four level courses, viz., 'O' Level (basic course for 10+2 pass students, or 10+, with one year computer experience or studies at a recognised institute) with four papers, 'A' Level with ten papers at PGDCA level, 'B' Level with 25 papers at MCA level and 'C' Level at M Tech Level.

DOEACC programmes have been implemented by the private entrepreneurs in typical commercial manner through part time/visiting faculty. Thus, in spite of having good syllabi these programmes could not be implemented in its true sprit especially at 'B' and 'C' level. The well advertised equivalences were self-serving. Industry and the universities did not accept them. Industry accepts a B Tech/MCA over a 'B'/'C' level candidate. AICTE and UGC do not recognise 'B'/ 'C' level candidate for becoming lecturer in university/ institute. Thus, DOEACC programmes could not become popular amongst the people seeking information technology education in comparison to university level programmes. Other big private players in information technology education like NIIT and Aptech did not adopt DOEACC programmes. The effect is that the DOEACC programmes served the lower end of the aspirants and could not catch the imagination of high-end aspirants.

Privately Managed Programmes

To fill the gap for those aspirants, who could not get into the university system and to encash the 'dot com' and Y2K boom, number of commercial institutions (e.g., NIIT, Aptech, IEC, STG etc) came up during the last decade. Even some of the government undertakings like CMC, ET & T, ER & DCI (now CDAC), Uptron etc also got into computer education as additional business activity. While some of these organisations offered programmes to 'lateral entrants' for quick updating of skills but others offered programmes from ab-initio to higher levels. These organisations captured the market of information technology education by playing with the psyche of people during the last decade that information technology education would bring the monetary windfalls and destination to USA. As the balloon of 'dot com' and Y2K burst, many such organisations went out of business. The quality of training was up to the mark only in a few cases. One could find computer training shops in many markets and homes. To overcome the difficulty of faculty these private entrepreneurs used an innovative concept of "earn while learn" - senior students were used to teach junior students. Such students neither became good students nor good teachers.

Many of these organisations as well as conventional institutes brought foreign collaborations. It helped in bringing international contents and systems to some extent. A hefty fee was charged by these organisations from their clients. Neither the environment nor the faculty could provide all that was promised.

The effect has been low value addition, frustration, and low-level jobs after spending huge sum of money. The syndrome that prevails is "There is huge number of trained people without jobs but a few RIGHT people available for the jobs".

Problems in Existing System of IT Education

It may be argued that despite problems and deficiencies India has done very well in acquiring pre-eminent position, then why raise such questions. Three aspects are pertinent:

First, major contribution to present pre-eminence came from positive network and reputational effects of the "brain drain" and the Indian diaspora especially in Silicon Valley. Silicon Valley is currently under threat for its own survival.

Second, islands of excellence cannot sustain the pre-eminent position. India needs many Infosys and Wipro and for that sustained supply of high quality manpower is needed.

Third, the pre-eminence has been through the service sector and outsourcing due to low-priced labour syndrome. Such a situation is always fraught with dangers as it is highly linked with socio-politico-legal environment in those countries.

If we wish to become economic super power through the knowledge market route, we need to be global leaders in product development and value addition. It is a huge task before the national planners of information technology education.

Thus, having analysed the growth during the last decade we need to structure the problems associated with the existing system. It will help the academia, administrators of education and the institutions to identify the issues to be addressed for upgrading the system before it slides to lower depths. Some of these are elaborated below:

Lack of Long-term IT Plan. No realistic long-term growth plan of information technology industry is available. Though Govt of India created information technology ministry lately, it along with Nasscom could not provide a realistic long-term plan. The problem gets compounded due to export orientation of information technology industry that too to language (English) specific countries. If India is to expand its market to non-English speaking world, language barriers need to be crossed. Both educationists and industry have lessons to learn from this aspect. In the absence of long-term plan haphazard growth will not yield desired results.

Too Many Programmes. There are too many programmes and degrees being offered with no perceptible variation in the contents. Simultaneously, with the same name of programmes there are large variation in subjects and depth taught at inter-university and intra-university levels. This is leading to problems of standardisation and confusion in the market place.

Too Many Players. Too many of players have jumped into information technology education market with a sole motive "to make hay while sun shines". Statutory bodies like AICTE, UGC and universities have lost control and have become part of the problem. These agencies themselves have no resources to monitor and provide direction for systematic growth of information technology education. Universities have crossed their areas of jurisdiction in numbers of cases. 'Law of Entropy' (i.e., a system that is not monitored and controlled tends to deteriorate over time) is fully operational in IT education system in India.

Lack of Quality Faculty. Information Technology is relatively new field. Since information technology professionals were offered high salary, they went to software development. Better-trained people did not opt for teaching jobs. This led to shortages of quality faculty. Sudden expansion also caused shortage of trained faculty. This is one of the biggest problem that high end information technology education is facing today.

Lack of Quality Control. Information Technology is a 'cutting edge' technology. Moore's Law governs its growth. It demands continuous up-gradation of knowledge and hard work like medical science. Poor quality of training would be disastrous for the long-term growth of this sector. Non-availability of quality faculty is further adding fuel to the fire. Lack of standardisation, lack of control and lack of accreditation mechanism are contributory factors in achieving quality assurance. If we wish to become global leaders we cannot do that by justifying Lord McCauley.

Lack of Infrastructure. Information Technology education, especially at high end, requires costly infrastructure support that is lacking. Many institutions and organisations that jumped into information technology education field could not provide right infrastructure support. Computer training requires aptitude and attitude to work on computer for hours together, which needs a quality environment and support from the institution. Residential universities and institutions are able to provide such an environment. In many other cases it is questionable.

Premises

Education has direct relevance with the economic well being of the people. People, generally, choose those areas for education where they perceive the opportunities for employability are higher. Thus, any plan/framework for information technology education is directly linked with the current shape of the information technology industry and its perceived growth. Thus, certain premises are relevant for developing any framework for information technology education in India, viz.,

- For substantial time the character of information technology industry would remain "export orientated" and that too in software. Thus, high-end education is required to be globally aligned.
- New markets in non-English speaking countries must be explored that needs breaking the language barriers.

- Service sector (e.g., BPO and call centers) will continue to grow. Needs of this sector are required to be addressed to.
- Indian environment is not yet ripe for the internal usage of high-end information technology enabled solutions at large scale. The model of information technology education, thus, has to be asymmetric catering for internal and external needs independently.
- Information Technology quotient in our systems and processes of governance needs to be enhanced. For this existing systems and processes of governance at Central and States level need to be aligned (rationalised and re-engineered) with information technology enabled systems and processes. It will lead to increased internal consumption and sustained growth of industry; and will reduce the excess dependence of information technology industry on exports.
- For the balanced growth of information technology sector, emphasis on the indigenous growth of hardware and communication sector must be enhanced with cost reduction as key feature.
- Internal development in India must be based on open source systems, i.e., emphasis on homegrown products must increase.
- There will remain shortages of faculty.

Educationists, administrators and planners must take into account the above and such other factors while planning a framework for information technology education in India and to give it a long-term direction. It may be stated that the governments (both Central and States), industry (Nasscom and other business organisations), education administrators (of AICTE, UGC etc) and academia need to work in tandem to evolve standards in this area as the stakes involved are very high. Information Technology has evolved in India at a level that it has changed the socio-economic posturing of this country and its people. It has tremendous potential to bring in internal efficiencies that is beyond comprehension of ordinary individual. Thus, information technology education deserves all the attention at the highest levels. It should not be allowed to get entangled in the cobwebs of commercialisation and bureaucratic hurdles.

A Central Agency for IT Education

Information Technology is an amalgamation of numbers of technologies, viz., computer sciences, communication technology, network technology, Internet technology, and hardware and software technologies. Information Technology uses vital infrastructure of a nation like satellite, mobile and fixed telephone systems and it supports nation's economy, governance, business, security etc. Thus, vital national interests are linked with the development and growth of information technology and allied technologies. Information technology has emerged as a major driving engine for the prosperity of nations.

India needs to create an autonomous central agency similar to Medical Council of India to coordinate and provide guidelines in this vital area of information technology education. Information Technology needs to be treated at par with Nuclear and Space programmes in India. It may be mentioned here that an 'All India Board of information technology Education' has been set up under AICTE for developing curriculum, development and maintenance of standards on the task force's recommendation. It is worth reproducing the excerpts from Task Force on HRD in information technology (para 3.30) at this point: "It was noted that many of the interventions proposed by the Task Force will have to be implemented through the instrumentality of the AICTE and hoped for its full support."

It appears the Task Force had some doubts while stating the above. AICTE and UGC in fact have become too unwieldy to monitor or provide any meaningful guidance in this vital area. The haphazard growth and the kind of commercialisation as discussed earlier is the testimony of this and is not in the larger national interests. The proposed agency needs to be lean and effective with sufficient powers to intervene wherever necessary and their recommendations must be binding for AICTE and UGC. If such an agency were under the administrative control of AICTE, the desired results would be doubtful. Simultaneously, this suggestion does not mean to create bureaucratic hurdles in the growth of information technology education. This central agency may include professionals from information technology and various allied fields. Some of the roles of such an agency could be:

- This agency may monitor major trends and provide short and long-term technology forecasts for information and allied technologies for the use of industry, education and others.
- It should develop short and long-term plan for information technology education based on the technology forecasts.

- It should advice the governments on infrastructure development for high-end usage of information technology in India and should facilitate its use in education.
- It should provide advice and guidelines for developing curriculum for information technology education in India both for global needs and for internal usage.

Further, the National Task Force on Information Technology and Software Development recommended (recommendation number 68): "An Institute for computer professionals of India shall be set up on the pattern of the Institute of Chartered Accountants of India: the Institute will be nucleated by Nasscom with initial financial support from the industry and the Government. The Institute will be given the responsibility as an Accreditation Body for information technology Education and Training Programmes with full Government recognition in addition to the DOEACC Programme"

To fix the accountability of private sector and give credibility to its efforts in information technology education certain certification and accreditation agency is required. This Institute needs to be set up at the earliest with the right empowerment from the Government and should be designated as National Certification Agency for privately managed programmes.

Accreditation is not only required for privately run programmes and self-financing institutions, it is required for Central and States' run universities and institutions too. The norms for accreditation for self-financing institutions are quite stringent which are not being fulfilled by many of the Government run universities and institutions. National Board for Accreditation (NBA) has been established under the AICTE for technical institutions. Similarly, National Accreditation and Assessment Council (NAAC) is created under UGC to accredit universities. Not all universities and not all institutions are accredited yet. Is there any university (Central or State) in India, which has been accredited for all the programmes that it runs? Tremendous efforts are required in this direction.

What UGC and AICTE should do?

The problems associated with the existing systems of information technology education have been analysed in details and have been structured. UGC and AICTE are the two prime agencies that are involved in shaping the higher education system. Both these agencies can jointly take certain steps to streamline the existing system, viz.,

First, there is an urgent need to standardise the nomenclature of degrees offered by various universities/institutions. It will eliminate the confusion amongst the people and the industry at national and international level. All concerned people will know which degrees are offered by the Indian system and would be able to draw necessary equivalences.

Second, at engineering level only BTech/BE could be permitted. The thrust of BTech (CS) should be on hardware, LSI/VLSI design, embedded software, CAD/CAM, artificial intelligence and robot technology, networking etc. BE (CS) could focus on software engineering, data warehousing and data mining, ERP/EAI, project management etc. First five semesters could be common; two semesters could be of specialisation and one semester of project.

Third, for non-science and non-mathematics students, however, three-year programmes in computer science may still continue at undergraduate level. The nomenclature across all the universities in India could be BSc (computer science). The curriculum also needs to be standardised. The syllabi could have two papers of Mathematics, one of Digital Electronics, one of English/Communication Skills and rest of computer sciences. Such students when they do MCA/MSc will be asset for the nation.

Fourth, AICTE and UGC may resolve their problems to revive four year BSc Honours (computer science) programme at undergraduate level for non-science 10+2 students. Four-year programme could have one-year specialisation in hardware/software/networking. The curriculum could be so designed that it simultaneously prepares the students for international certifications like CCNA, MCSE etc by amalgamating their syllabi into universities curriculum. UGC may call it BSc Honours (computer science). This will open higher-level job opportunities after graduation itself. Such students should be made eligible for admission to MTech programmes in computer science within India. They will get direct admission in postgraduate programmes in USA and other countries, where 16 years education is a must.

Bureaucratic hurdles have been holding this change. AICTE and UGC have to think in larger national interests and the problem can be resolved in no time. To exercise control on reckless proliferation a condition of 'specific permission of UGC' may be put to decide universities/institutions where four year BSc Hon. programme can be run.

Fifth, the eligibility for postgraduate programmes (like MCA, MTech, and MSc) should be restricted to those who have undergone three/four year undergraduate programme in computer science (like BTech/BE/BSc-CS). It will produce high quality professionals in information technology and will also facilitate in upgrading the curriculum of MTech/MCA/ MSc substantially.

An MSc (Mathematics and Physics) doing MTech (computer science) is not paying dividends. Similarly, ordinary BSc/BCom/BA doing MCA/MSc (computer science) has created a precarious syndrome "huge number of trained people without proper jobs but a few right people available for the jobs". In the initial phase of development and during the period of hype all programmes were thrown open to every one. It was understandable for that period. The main thrust then was to create large manpower pool quickly. There is no logic to carry on with this any more now, as market sense does not permit such an experiment to continue. We must revert back to time tested eligibility conditions, i.e., post graduation should be allowed in a field that has been studied at least for three years at undergraduate level.

By adopting the above systems there will be four programmes at undergraduate level, viz., BTech, BE, BSc Hon and BSc and three programmes at postgraduate level, viz., MCA, MTech and MSc. Students can choose any option at all India basis.

Sixth, there is an urgent need to put an end to the system of information technology education through franchisees and distance education at graduate and postgraduate levels. It may be noted that the learning environments available to a student in general are:

(a) Learning-by-reading

(b) Learning-by-seeing

(c) Learning-by-doing

Distance education largely provides learning-by-reading environment. However, information technology education requires strong support of experiential learning, i.e., learning-by-doing - by actually doing it through a series of hands-on, practicals, and experiments. Information Technology education needs Guru's support, which is seldom available in distance education mode and at franchisees.

Further, the managers of franchisees and distance education centres have little interest in quality control and long term commitment in developing required infrastructure. The universities/deemed universities giving authenticity to them have no resources to monitor their functioning. When there are sufficient surpluses at conventional university level programmes there is no reason to allow franchisees and distance education mode in information technology education.

However, to sustain the private entrepreneurship all such franchisees should be brought under the ambit of proposed Accreditation Body for information technology Education and Training Programmes to be set up under the auspices of Nasscom. These franchisees should not be allowed to distribute the university degrees from the back door. A credit transfer system may put in place in consultation with the proposed accreditation body under Nasscom, AICTE and UGC to award university degrees.

Seventh, the constitutional provision empowering the States to establish universities for fulfilling the aspirations of the people is well recognised. But, when such universities cross their areas of geographical jurisdiction to run courses elsewhere the considerations are commercial and quality is the casualty. The students and the nation are the sufferers. AICTE, UGC, Govt of India and States have to seriously think on this aspect and take remedial measures at the earliest.

Foreign collaborations also fall in the same category. There is an urgent need for checks and balances in place despite WTO talks.

Eighth, One of the biggest issue in achieving high-end information technology education is the shortage of right quality of faculty. Any discipline to grow in a country, takes about three decades and in real sense information technology is only one and half decade old in India. The best people will logically choose the industry where they can get remuneration befitting their intellectual property. In information technology like any other field, thus, the teaching is not the first choice of young engineers and postgraduates. This will remain so for considerable time. To overcome this difficulty, the best talents amongst Indians and NRIs may be attracted by absorbing them at higher levels directly. For this, the conditions of employability need to be relaxed as an exception at least for a decade. After a decade and half the problem of availability of faculty will ease.

It must be mentioned here that the Task Force on HRD in information technology has given number of suggestions in this respect, e.g., Early Faculty Induction Programme, Quality Improvement Programme, Sequential PG Programme in information technology, transmigration, switchover of faculty from interfacing disciplines, visiting and adjunct faculty. It must also be mentioned that 'human beings are economic rational beings'. They will put an extra effort when it is consistent with the economic rationality. The solutions, thus, have to be within the realm of economic rationality.

Reassess the Role of DOEACC

It is time to reassess the importance and need of DOEACC. When DOEACC was established the Government was the only driving force behind the initiation of information technology education. In the present circumstances when engineering institutions and conventional universities/institutions have large surpluses of intake capacity, the rationality of DOEACC programmes has to be reassessed. The issues of non-acceptability of students of DOEACC in comparison to others from university system and quality control are required to be considered while reassessing the role of DOEACC programmes.

As stated earlier that the National Task Force on Information Technology and Software Development stipulated to set up an Accreditation Body for information technology Education and Training Programmes under Nasscom - in addition to DOEACC. It is to be noted that the DOEACC programmes are run by the private entrepreneurs. Since the proposed body will be on the lines of Institute of Chartered Accountants and will have Government's recognition, the necessity of continuing with the DOEACC programmes (i.e., in addition to DOEACC clause) needs to be reassessed. It will be better to adopt the code and good aspects of DOEACC into the proposed body.

Role of Private Run Programmes

To look after the needs of part time or lateral learners private operators like NIIT, Aptech may continue to operate. These organisations would be able to fill the gap for those who are not in a position to join the university system. When the university system acquires standardisation and quality, market mechanism will automatically wipe out dubious private organisations. However, as stated earlier these players should not be allowed to offer universities degrees (Indian or foreign) from backdoor as franchisees or in distance education mode. The existing system that certain organisations and franchisees are using to distribute degrees is neither in the interest of students nor for the national interests at large. These organisations can play vital role through crash courses for the needs of specific segment of the industry, e.g., call centers, BPO etc. These players can play very dynamic role in enhancing the skill sets of already trained people.

As discussed earlier, the proposed Accreditation Body through its certification mechanism and credit transfer system can provide credibility to the efforts of these entrepreneurs.

Enhancing the Information Technology Quotient: What the Governments should do?

Information Technology industry cannot survive for long only through its exports. Government strategy to milk information technology industry as a cash cow for foreign exchange is based on a faulty premise. A nation that is not using a given technology internally cannot play a leading role. The industry will continue to play a second or third role and will remain dependent for its survival on the market forces. The moment another cost effective service provider is available the importer will migrate to him. If India wishes to become *economic super power through this route*, internalisation of the information technology and its quotient needs to be enhanced within India.

Number of ills of governance, business and education itself can be solved in India by adopting "IT Enabled Solutions". Today, in every field of knowledge information technology application is possible. This needs to be enhanced at Central and States level. Every one can see the results of Railway Reservation System post computerisation. On the other end we have an example of PAN numbers, where Income Tax department could not issue PAN numbers in ten years to a small numbers of tax payees. There are major applications like 'Management of Land Records', 'Management of Vehicle Registration at All India Level', 'Management of Legal System' and 'Management of Crime Records' that can only be managed through information technology enabled solutions. There are thousands of such large and small applications in government and business sectors. Once the right direction is given, information technology industry will acquire internal orientation. As the information technology quotient at work environment increases, the society will become technology savvy and consequently objective in its approach. This will resolve

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Benchmarking : Striving for the Best Practice for Librarians

B K Singh
(V M Open University, Kota - 324010)

and

D K Singh
(Banasthali Vidyapith, Banasthali)

Benchmarking is a tool for improving performance by learning from best practices and understanding the processes by which they are achieved. It involves looking outward to examine how others achieve their performance levels and to understand the processes they use. In this way benchmarking helps explain the process behind excellent performance. Application of benchmarking involves four basic steps. Firstly, understand in detail the processes. Next, analyse the processes of others. Then, compare the performance with that of others analysed. Finally, implement the steps necessary to close the performance gap.

Libraries have traditionally used external comparative benchmarking studies to measure themselves against others in order to justify their existence or prove their value and support their case for maintaining existing levels of staffing or funding. These studies were invariably based on statistics gathered and shared for the purposes of measuring how they rank with other libraries (Gohlke, 1998). Libraries have also employed internal benchmarking methodologies to measure the 'value' they contribute to their organisation and compare this against what is contributed by other departments, divisions or information providers.

One of the primary aims of a librarian is to ensure the offered service which contributes significantly to the success of the organisation and is as good as it can be. To do this, a librarian must utilise internal and external benchmarking processes to measure performance and identify possible areas of improvement.

What is Benchmarking?

Benchmarking is a management technique to improve business performance. It is used to compare performance between different organisations or different units within a single organisation undertaking similar processes. It is an ongoing method of measuring and improving products, services and practices against the best that can be identified in any institution anywhere.

There are many similar definitions of benchmarking, most of which fit neatly on two groups-those that include implementation of the findings and those that do not. Jane Foot's definition is widely cited in library literature, yet it's a definition that does not incorporate the implementation of the identified best practices.

Foot (1998) defined benchmarking as "the process of comparing yourself with others measuring your service's processes and performance and systematically comparing them to the performance of others in order to seek best practice. It enables the identification of areas where improvement is possible, how it might be achieved and what benefit it might deliver".

The American Productivity and Quality Centre defined benchmarking as: "The process of identifying, understanding, and adapting outstanding practices and processes from organisations anywhere in the world to help your organis- ation improve its performance."

Benchmarking is above all a practical tool. It is constantly evolving in the light of ever-increasing experience, applying it to different organisational and cultural settings.

The origins of Benchmarking

Benchmarking, as it is known to-day was developed in the USA in the seventies. However, the underlying concept has been in existence for considerably longer. The studies on the scientific methods of work organisation performed by Frederick Taylor in the latter part of the nineteenth century represent an early use of the benchmarking concept.

Benchmarking was originally developed by companies operating in an industrial environment. It has, therefore, been applied most widely at the level of the business enterprise. In recent years, organisations such as government agencies, hospitals, universities, etc. have also discovered the value of benchmarking and are applying it to improve their processes and systems. In addition, industry associations now increasingly use the tool to improve sector specific processes. Most recently, public authorities have begun to explore the use of benchmarking as a tool for improving policy implementation processes, by focusing on the framework conditions, which underlie the business environment and the economy more generally. The first reported library benchmarking study was conducted by the Metro Toronto reference library in 1985.

Benefits of Benchmarking

Benchmarking offers a number of benefits. These include:

- Improved customer satisfaction
- Increased productivity
- Reduced operating costs
- Identifing and streamlining work process
- Developing meaningful measurements and quantitative terms
- More efficient and effective processes
- Improved performance and customer service
- Increased competitiveness
- Increased utilisation of resources
- Improved levels of management support
- Better and faster decision-making
- More efficient and effective marketing
- Accelerated change and facilitated change management
- Improved professional relationship
- Proof of library's value to the organisation

Process

Benchmarking consists of a logical sequence of stages, which an organisation goes through to achieve continuous improvement in its key processes. It is a process that takes time. Depending on the subject and the information available, a benchmarking exercise might run over three months up to one year. It should be repeated after a certain time period, and the impact has to be monitored.

There are many books articles and papers about the development of a benchmarking process, and the most consistent message appears to be that the process must be rigorous and well planned. Henczel (2002) suggested the following stages for developing a benchmark process.

- Plan what you are going to benchmark, who, with whom and for what purpose. As with any other project, planning is the most critical stage because inadequate planning and preparation can cause a project to fail. Plan your resource allocation (who will do what, how and who will pay for it) and decide which process will be benchmarked and why.
- Define the process and identify all the inputs to the process, the outputs and the customers. Define the boundaries of the process.
- Flowchart the process and include inputs, activities, indicators, decisions and outputs.
- Identify problems in the process and their possible causes. Use the expertise of the staff who actually perform the activities, as they have the most in depth understanding of related issues.
- Develop the metrics (how one will measure) and identify significant qualitative data that is important of the process.
- Collect data, measure the process.
- Compare collected data with benchmark partner.
- Identify areas for improvement.
- Formulate recommendations and an implementation plan.
- Implement improvements.

Choosing what to benchmark can be as important, if not more so than choosing a benchmarking process or partner, because it will impact how useful the results are to the organisation. A useful list has been developed by Catherine Cassell, Sara Nadin and Melanie Older Gray (2001) who suggested that the processes chosen for benchmarking must be. :

- Related to critical success factors for success
- Processes that are currently causing trouble
- Processes that are important to the customers and which are not performing up to expectations
- The areas where the competitive pressures are impacting the most (e.g. price, flexibility, products)
- Processes that have the greatest potential for differentiating the competition; and
- Processes that are not in transition.

Tips for Successful Benchmarking

There are some tips for successful benchmarking such as:

- Aligning benchmarking projects with strategic objectives (critical business issues that have high pay-offs and are aligned with organizational values and strategy)
- Following a rigorous process (planning, analysis, implementation and review)
- Benchmarking the process and not just the outputs
- Choosing an optimal benchmarking partner
- Committing to implementing the changes required

- *Understanding the organization and its culture* so that to adopt the most appropriate changes in the most appropriate way
- Understanding the limitations of benchmarking.

Benchmarking in Libraries

Librarians in the public or private sector through out the world have been encouraged to follow their institution's lead and conduct benchmarking studies to 'prove their value' to the institution. Most of the librarians have started out doing a comparative benchmarking study used mainly for justification purposes. Statistics are collected and compared on staffing size and ratio, expenditures, services offered and productivity with similar type of libraries to measure how they rank.

Benchmarking requires libraries to examine their work processes and measure their productivity against that of other libraries. In monitoring other libraries, they can enhance their own performance by adopting, or adapting, the competitor's best practices.

Libraries are becoming increasingly accountable and are assuming a more business-like model. Increasingly the three E's – effectiveness, efficiency and economy – are addressed. Benchmarking is an excellent tool for librarians to determine how effective, efficient and economical their library operation rates.

The goal of benchmarking is to increase library's performance by:

- Identifying libraries with best practices as partners
- Measuring and comparing a selected work process against partner libraries
- Conducting an interview with the library with the most efficient and effective work process and
- Adopting, or adapting, partner's best practices in the library.

Since best practices are always evolving, benchmarking is a continuous process. As a Total Quality Management tool, it requires librarians to focus their efforts on improving the work processes that impact the delivery of library products and services that are important to the customers. Benchmarking gives a tool to librarians to show the value of their library to the management in numerical terms. It proves to librarian's upper management, administration or library board as a proactive librarian devoted to total quality. Librarians will impress them with realistic, quantifiable goals based on superior library practices.

In addition, a benchmarking study can be used to prevent a budget cut or library outsourcing. Benchmarking helps librarians to increase their performance and improve its work processes. The end result of benchmarking is reduction of coasts, improved customer service and increased system efficiencies. These improvements enhance librarian's reputation in their organisation or community. This Total Quality Management Tool helps librarians to attract new customers while retaining the old ones.

Librarians can use internal and external benchmarking to improve their process and prove their 'value' to their organisation. The key to benchmarking is to see what is being done differently and to have the ability to assess the value of those differences to the library.

Internal Benchmarking

With this method, librarians benchmark their library against others in their organisation or library system. Benchmarking this way involves the following steps:

- Conduct a preliminary benchmarking analysis including determination of the needs of management, patrons, and library staff
- Develop benchmarking metrics (measures)
- Identify internal benchmarking partners
- Collect and analyse the benchmarking data
- Present results to management.

With this benchmarking process, librarians do not have to leave their organisation or system to find partners. Sister libraries will be more willing to share their information than libraries from other organisations. For those libraries in the private sector librarians don't risk releasing their organisation's confidential information to their competitors. Benchmarking with the sister libraries promotes professional cooperation and building within the closed library system.

Despite these many benefits, there are some disadvantages. One is that benchmarking takes time. A typical internal study may last up to four months. Another disadvantage of internal benchmarking is librarian's limited exposure to the profession's best practices.

External Benchmarking

This procedure is like internal benchmarking with the additional steps of identifying and contacting outside partners. External benchmarking allows librarians to witness, firsthand, the work processes of other libraries. With this broader perspective, librarians will have greater ability to identify and implement the profession's best library practices. Library staff will work as a team and build valuable professional relationships with librarians at other organisations.

Some difficulties with external benchmarking may be: precise time requirement, partner identification and confidentiality. External benchmarking requires a considerable time. Planning, training and data collection are more extensive than internal benchmarking. The complete study can take six to 12 months. There are many libraries; it may be difficult to find the right library partners for benchmarking study. To overcome this, librarians may use the classified section of the library publications to advertise for specific types of partners.

Conclusion

Benchmarking is a Total quality to tool that requires librarians to look closely at how other librarians accomplish selected work; it can be considered a kind of friendly competitive intelligence used to increase library's performance and customer service. Best library practices are always evolving; benchmarking is not a one-time activity, but a continuous process. In a nutshell, benchmarking is a four step activity where:

- Librarians measure their target library process that needs improving;
- Other(partners)libraries measure the same library process in their libraries;
- Librarians and their partners compare the measures and decide which library is the highest performer or best practised.;
- Librarians adopt or adapt partner's best practice.

Unfortunately, benchmarking is not quite as easy as it sounds. It takes time to conduct a study that a librarian can accomplish a benchmarking study, but a team works towards this end is definitely better. Of course the size of the library staff dictates the level of involvement, but the rallying cry for selecting a team should be the workload. Librarians can definitely use benchmarking to improve their library operations and services.

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numerous problems that our governance, business ethics and society in general are afflicted with. The political and government setup and business need to have collective wisdom to turn around India and make her economic super power in next two decades.

Conclusion

In the history of a nation's development seldom comes an opportunity when a given technology has so much of potential that it can change the destiny of its people. In Indian context, information technology has provided us such an opportunity - it should not be allowed to fritter away. India's rich intellectual property can be harnessed through this route that will immensely contribute to economic well being of the people of this country. It has the potential to provide India its rightful place in the comity of nations. It has the potential to change internal posture and confidence of the people of India. It has the potential to correct lots of ills in governance and ethical problems in routine life. IT education should not be allowed to get entangled in bureaucratic quagmire and commercialisation. Politico-bureaucratic set up, academia and business have to collectively think to give IT education a direction that propels India's economic growth. It requires bold decisions and relentless pursuit to raise the level of IT education at global standards.

Certain suggestions are included in this paper to improve the existing system of Information Technology education. These are not exhaustive, however, these provide a direction, philosophy and building blocks for all concerned to develop a framework for IT education in India and to initiate a debate. ❑

"To the Hungry, God is Bread"

U R Rao, Chairman, PRL Council, (Former Chairman, ISRO and Secretary, DOS), Department of Space, Antariksh Bhavan, New BEL Road, Bangalore delivered the Convocation Address at the fifth annual convocation of the Rajiv Gandhi University of Health Sciences, Bangalore on 28th March, 2003. He said, "In spite of the green revolution, our agricultural productivity continues to be low at 1.8 ton/ha. as against the world average of 2.6 ton/ha., leave alone the world's best of 5 ton/ha. The negative repercussions of the very green revolution have rendered large tracts of once fertile land into alkaline and saline deserts, due to water logging, large scale use of chemical fertilizers and inadequate drainage. Rapid deforestation, intense soil erosion and poor management of land and water resources have converted our fertile lands into problem areas resulting in agricultural stagnation. The loss of lives, livestock and property due to natural disasters is continuing to increase, year after year, causing enormous suffering and misery particularly to the most vulnerable segment of our society. Estimates based on most optimistic assumptions indicate that India's population will cross 1.6 billion by 2050, which will demand annual production of at least 400 million tons of food grain to provide adequate food and nutrition security to all people". Excerpts

My young friends, you are on the threshold of entering a challenging and exciting new phase of life, in an era, which is rightly termed as the space age, characterised by extraordinary scientific and technological achievements. Practically all the major discoveries such as locomotives, electricity and genetic engineering have been carried out in the last hundred years. The vast benefits of our space efforts today extend over communication, management of natural resources, disaster mitigation, flood and drought management, health and entertainment thus virtually touching every facet of human endeavour. Spectacular developments in space technology, rapid advances in digitalization and convergence of computer and communication technologies have initiated the new Information and Communication Technology (ICT) revolution, making it possible to transmit and receive even terra bytes of information anywhere on the planet. ICT revolution has spearheaded the growth of knowledge societies breaking all geographic boundaries and barriers, bringing even remote areas into the main stream by linking them to information super highways.

The historic discovery of DNA structure by Watson and Crick in 1953 using X-ray crystallography initiated a new genetic revolution. Using modern tools of photolithography and computer technology, the detailed structure of DNA molecules, each containing thousands of genes like pearls on a string, have now been investigated. The painstaking and meticulous deciphering of the sequence of genes, housed in 23 pairs of chromosomes, unveiling the secret of human genome has brought us much closer to the prospect of using gene therapy for curing various human diseases.

The present diagnostic procedure, which is often likened to an incompetent mechanic diagnosing the car by listening to the purring of an automobile engine, is on the verge of a new revolution. Due to our inability to detect latent problems, a patient could succumb to a severe heart attack, even after a thorough medical check up with ECG. Diagnosing cancer after spotting the tumor may be too late to stop several hundred million cancer cells growing and spreading inside the human body. Bacteria and viruses are constantly mutating and evolving to defeat the best of our medical defenses resulting in the increased spread of infectious diseases, despite all the medical advancements. However, the recent advances employing genetic engineering have radically changed our basic concept of medical diagnosis. The powerful convergence of the quantum, computer and DNA revolution has now given birth to a new science called 'Molecular Medicine' which promises to offer new ways of combating the challenges posed by the virulent infectious as well as inherent diseases of the 21st Century. Advances in human genome sciences are expected to change medical dispensation from treatment based to a prevention based discipline. To quote Dr. Nuland "In a 20 year period, the ancient art of healing passed from the relatively simple and restricted optimism of the antibiotic era to the seemingly endless vistas of the molecular age".

State of India

Just prior to our independence in 1946, India suffered one of the largest famines in the history of our nation, which made Mahatma Gandhi lament, "To the hungry, God is bread". Rapid technological developments since independence have no doubt had a significant impact on the socio-economic development of the nation. Thanks to the green revolution, the annual food production in the country has increased from a mere 55 million tons to over 210 million tons, transforming the country from a food importer to a marginal exporter, despite three fold increase in population. India's software industry has emerged as the fastest growing economic sector, growing at a compounded annual growth rate of over 50%.

Information Technology has become a new Mantra in the country with bio-technology and genetic engineering already vying to attain a similar recognition.

In spite of these spectacular advances in science and technology, ranging from one of the important social revolution on earth namely "Green Revolution" to conquest of space and initiation of information technology and genetic revolution, a third of our population continue to suffer from severe malnutrition, over 40% are still illiterate, more than half of our population do not even have access to basic sanitation and the quality of life in the country ranks a low 130 among 180 nations in the world. Our country has the dubious distinction of having more than 30% of the 1.4 billion people in the world, who are barely managing to survive at less than a dollar a day. With over 25% of our population having no access to clean drinking water, water borne diseases like cholera, typhoid, tuberculosis, dysentery and gastro-enteritis have become serious health hazards. More than 10 million people in Andhra Pradesh, Karnataka and elsewhere drink water highly contaminated with fluorides and another two million in Bengal and surrounding areas drink water containing excessive arsenic. Due to rampant environmental pollution, vector borne diseases like Malaria, Filariasis, Dengue fever are on the increase. Malaria and TB each affect over two million people in our country causing four lakh deaths annually.

Explosive population growth and neglect of rural development have resulted in rapid urbanisation, turning our major cities into highly populated mega-slums, instead of making them engines of growth. Indiscriminate plundering of natural resources, unchecked industrial expansion, total neglect of environment and poor sanitation have resulted in over 20% of our population in major cities suffering from hypertension, asthma, mental health problems, respiratory and water borne diseases. While we have legislated many laws against environmental pollution, lack of political will combined with public apathy has resulted in non-enforcement of these laws, notwithstanding the realization that environmental stresses are strongly correlated with both physical and mental disorders.

While the average life span in India has increased to 64 years, infantile mortality rate continues to be high at 71 per 1000. Over 25% of the children born are characterised by low birth weight due to maternal and foetal under and mal-nutrition. Almost 60% of children under five are malnourished and close to two million die every year. With three quarters of Indian women suffering from anemia due to iron deficiency, and estimated 1,20,000 of them die every year from causes related to pregnancy and child birth. Even the most conservative estimates of WHO indicate that the number ofAIDS affected living people in India exceeds four million which includes 0.8% of our total adult population. Large scale illiteracy, rampant poverty and lack of affordability have further increased the geographic, social and gender inequity in the country, with the burden of disease mainly falling on the vulnerable, poverty stricken population.

In spite of the green revolution, our agricultural productivity continues to be low at 1.8 ton/ha. as against the world average of 2.6 ton/ha., leave alone the world's best of 5 ton/ha. The negative repercussions of the very green revolution have rendered large tracts of once fertile land into alkaline and saline deserts, due to water logging, large scale use of chemical fertilizers and inadequate drainage. Rapid deforestation, intense soil erosion and poor management of land and water resources have converted our fertile lands into problem areas resulting in agricultural stagnation. The loss of lives, livestock and property due to natural disasters is continuing to increase, year after year, causing enormous suffering and misery particularly to the most vulnerable segment of our society. Estimates based on most optimistic assumptions indicate that India's population will cross 1.6 billion by 2050, which will demand annual production of at least 400 million tons of food grain to provide adequate food and nutrition security to all our people.

The hope of economic globalisation and liberalization providing the developing countries a free access to the global market has remained a dream. Whereas the richest 20% of the global population living in rich countries account for 93% of the internet usage, the poorest 20% use less than 0.2% of internet facility.

Large scale illiteracy, poor infrastructure and obsolete technology have made our industries inefficient and uncompetitive in the global market. Political ineptitude, bureaucratic bungling, lack of commitment and poor management have resulted in low economic growth rate, declining share of world trade and marginalisation of the Indian economy in the world. Denial of latest technologies to the developing countries has made a mockery of free and easy access to the global market place and created a new technology apartheid regime. Economic globalisation in the information age has further marginalised the developing countries by increasing the digital divide between the haves and have nots of cyber space. India with less than 2% of global land area has 16% of world population, but less than 2% global forest, accounts for only 3% of energy consumption and contributes to just 1.5% of the global GDP.

Sustainable Development

Since I firmly believe in the old adage that an ounce of prevention is better than a pound of cure, I would like to briefly touch upon what space science and technology can contribute towards the enhancement of human health. Poverty, hunger, illiteracy and environmental pollution being the root causes that contribute to the human diseases, the greatest challenge before all of us is to ensure basic food, economic and environmental security on a sustainable basis to all our people and enable them to achieve an acceptable quality of life. Unless we are able to initiate a new 'Ever-Green' revolution, which can double our food grain production on a sustainable basis in the next four decades, India will face unprecedented chronic hunger and famine.

Sustainable development calls for maintaining the fragile balance between productivity factors and conservation practices, through monitoring and identification of problem areas requiring application of energy intensive land use practices, crop rotation, bio-fertilizers and reclamation of wastelands. Space remote sensing techniques have now become a very powerful tool for monitoring and management of natural resources, environment, agriculture, land and water resources and natural disasters. Precision farming methods using Geographical Information System and Geographic Position System are now available to evolve suitable agricultural planning and management strategies to double our food grain production on a sustainable basis. Equally remarkable have been the advances in biotechnology, which have firmly established human capacity to produce genetically engineered seeds, early maturing dwarf varieties of crops, site and crop specific fertigation strategies, scientifically tailored transgenic plants and pest resistant hybrid cultiyars. Pioneering field experiments conducted in India as well as elsewhere have clearly established the feasibility of evolving site specific sustainable integrated management strategies combining the valuable inputs from bio-technology and space technology to substantially improve the carrying capacity of the land and provide adequate food and nutrition security to all our people in the coming decades.

Technology Driven Health Care

Availability of food grain by itself does not guarantee food and nutrition security to the poorer sections of the society, unless affordability is also ensured through universal education and empowerment. Extensive deployment of VSATs, internet connectivity and information kiosks have turned out to be ideal tools for providing interactive education and information access even in most remote areas. Experiments carried out in a few remote communities such as in Dhar District of Madhya Pradesh have enabled farmers to profitably sell their agricultural produce by checking the latest market trend, receive agricultural, veterinary and health advices, access computerised land records and even sell their skilled products and services globally by creating web sites.

Satellite communication technology has become a very powerful tool for providing a very wide spectrum of medical and health care services, ranging from dissemination of basic health care information to assisting rural doctors in medical dispensation through interaction with specialists elsewhere. Under disaster situations telemedicine can become a life saving program for mitigating the sufferings of disaster-affected people and dealing with post-disaster rehabilitation effort. The India Space Research Organisation has recently initiated the Telemedicine Project in 20 nodal areas in different States such as Karnataka, Andhra Pradesh, Kerala, Orissa, North East and Andamans, for providing medical advice, diagnosis and relief to patients by enabling them to have real time access to the facilities available in well equipped urban hospitals. Space imageries are also being increasingly used to track and even forecast the spread of epidemics and vector borne diseases like malaria, cholera and diseases of enviornmental origin like Hepatitis, Diphtheria and Tuberculosis by analyzing the surrounding environmental parameters responsible for their spread. A dedicated satellite providing country wide education and health services could indeed become a medical boon to remote area rural population.

Medical Education in India

The availability of just about 40 medical practitioners and 60 beds for a lakh of population in the country and that too primarily concentrated in urban areas, has left the 65% of rural population to the care of ill-equipped 25000 primary health and 1.5 lakh of sub-centers, most of which do not even have a skeleton medical staff. Recent survey by the Indian Medical Society shows that 75% of the qualified doctors practise in urban centers and 23% in semi-urban areas which leaves only 2% of qualified doctors looking after the vast majority of patients in rural areas. While the number of hospital beds available in urban areas exceeds 2 per 1000, it is less than 0.2 per 1000 in rural areas. This serious lacuna has been overcome to some extent, by the Central as well as the State Governments, by encouraging the practice of alternate medical systems such as Ayurveda, Homoeopathy, Unani and Sidda. Considering the growing public interest in the ancient medical systems, which claim to address both the physical and the spiritual side of the human body, AMA has promoted the study of alternate systems as a part of the medical course or as an elective subject in many medical colleges. It is hoped that medical colleges, which are engaged in this task, ensure that the ancient medical systems are also subjected to the high standards of scientific analysis, rigorous quality control, systematic clinical trials and authenticated documentation to ensure their safe and reliable application.

However, the mushrooming of medical college, from around 20 in 1957 to over 260 without having adequate infrastructure and qualified teaching staff is extremely worrying. Commercialisation of education in all professional colleges including medical and engineering disciplines is turning out a large number of poorly equipped graduates, incapable of serving our society. Many of these institutions have employed mediocre teachers not withstanding the fact that mediocrity in our educational system can only multiply mediocrity. Equally frightening is the prospect of even qualified teachers becoming obsolescent with the rapid advances in medical discipline due to the non-availability of refresher courses, in spite of having distance education facilities. Unless our medical institutions are massively supported and encouraged to carry out high quality research in frontier areas, we will fail in our task of producing a new generation of medical scientists, innovators and educationists who can shape the future of health services in the country. As our great poet Rabindranath Tagore said:

A Lamp cannot light another lamp
Unless it itself is lit
A Teacher cannot truly teach
Unless he himself is learning

Future Direction

In the coming decades advances in genetic research may enable us to uniquely identify genes responsible for various diseases from diabetes to AIDS and common cold to cancer. Availability of personalised DNA sequences, which can be fed into a computer, will be able to detect the latent diseases, well before the manifestation of physical symptoms. Employing photolithography techniques used in semi-conductor industry, scientists have already produced proto-type DNA chips of the size of a fingernail, which can easily be carried in the pocket of each person. The potential of the DNA chip, which squeezes an entire DNA chips of the size of a single chip, is truly astounding. Even the simple chip presently available, can be used to screen the notorious cancer causing genes which come in any of 450 different mutations. Within the next 20 years, it would be possible to develop even more sophisticated chips containing the entire personalised DNA sequence and quickly identify rogue genes using laser fluorescence technology and simple computers to predict latent problems rendering much of today's surgery perhaps unnecessary.

Many scientists are optimistic of identifying and isolating 'Mortality Genes' in human cells, which control the aging process in the skin, lungs and blood vessels. By controlling these cells, which are dubbed as M-1 and M-2, medical scientists hope that it would be possible to make the cells in a human body to age faster or become younger. Genetic engineering is advancing so fast that scientists are dreaming of not only controlling obesity, deadly diseases and the aging process in a human body but are also speculating on the possibility of altering behavioral characteristics of people and creating tailor-made designer children. Serious ethical questions are involved when scientists start playing God, whether it is in the production of transgenetic plant or in the creation of designer babies. While ethical implications of misusing the genetic knowledge and prevention of such misuse will continue to engage the mind of all intellectuals, there is no doubt that human-kind is on the threshold of a new revolution.

I am confident that medical scientists will be able to understand the interlinkages between brain, mind and body, in the not too distant future.

Conclusion

My young friends, you are truly privileged to work in and contribute to one of the most exciting and noble areas of science, that of saving, preserving and nurturing human life. Your life long education, which has only just begun here, will have to ensure that you do not become victims of technological obsolescence. The path breaking discoveries in medical sciences owe their origin to the tremendous inter and multi-disciplinary effort involving a number of disciplines such as structural biology, genetic engineering, neurology, psychology, quantum physics, instrumentation, computer technology and environmental sciences. The extraodinary growth of borderless knowledge, rapid technological changes and instantaneous access to data and information have become the salient characteristic features of the emerging knowledge society. Internet based medical applications are rapidly gaining importance with more than two million pages of information on a variety of subjects being added each day to the net. The leadership in science and technology in all fields of human activity including medical sciences will rest on those who can instantaneously access the available resources and connect with their peers, at will, in ways that were unthinkable even a few years ago.

My young friends, time and history have assigned you the unique role and responsibility of contributing to the health and happiness of all human-kind. Our vision of India should be to transform our country into a very strong and healthy nation, where every citizen of this nation is able to live a healthy fulfilling life of dignity and contentment. India's strategic vision must match the central reality that this country, which has nurtured one of the world's oldest civilisations, constitutes one sixth of humanity and is entitled to occupy its rightful place in the comity of nations.

With his remarkable insight President Kennedy stated over 40 years ago "Never before has man had such capacity to control his own environment, to end thirst and hunger, to conquer poverty and disease, to banish illiteracy and massive human misery. We have the power to make this the best generation of human kind or to make it the last". With the formidable stock pile of scientific discoveries and technological innovations available today and easy access to the future advancements, you can usher an exciting new era in our history, devoid of human suffering and illness. I hope that you and your kind will rise above the narrow selfish considerations and will use your skill and knowledge in the noble service of human-kind. ❑

CALENDAR OF EVENTS

Proposed Date of the Event	Title	Objectives	Names of the Organising Department	Name of the Organising Secretary/Officer to be contacted
Dec. 22-25 2003	International Conference on Information Technology (CIT-2003)	To deliberate on the on the current initiatives for IT in teaching-learning and administration and to evolve strategies that could be followed in future	Silicon Institute of Technology, Bhubaneswar	The Organiser, CIT 2003 Secretariat, Silicon Institute of Technology, Silicon Hills, Bhubaneswar 751 031, India E-mail:laxman@silicon.ac.in
January 4, 2004	Recent Advances in Mathematical Physics	To bring about interaction and exchange of view about research activities in the field of advanced Mathematical and Physical Sciences	Shri Dnyanesh Mahavidyalaya Nawargaon, Dist. Chandrapur 441 223, Maharashtra	Dr. K G Rewatkar, Organising-Secretary, NSRAPM'04, Shri Dnyanesh Mahavidyalaya, Nawargaon, Dist. Chandrapur 441 223, Maharashtra. Ph: (R) 07178-258309. E-mail: *dnyaneshmah@rediffmail.com*

CAMPUS NEWS

Workshop on Curriculum Development

A two-day Workshop on 'Curriculum Development for Job Oriented Courses' sponsored by Tamil Nadu State Council for Higher Education, Chennai was organized by the UGC - Academic Staff College, Bharathiar University, Coimbatore recently. The Workshop was co-ordinated by Dr. N. Balasubramanian, Director, UGC - Academic Staff College, Bharathiar University, Coimbatore. The Workshop was attended by twenty teachers working in nine Constituent Colleges of Bharathiar and Periyar Universities teaching various subjects like Physics, Chemistry, Mathematics, Botany, Zoology, Computer Science, Tamil, Economics, Commerce, History, and Political Science . Prof. S. Sivasubramanian, Vice Chancellor, Bharathiar University Coimbatore presided over the inaugural function. In his presidential address, Prof. Sivasubramanian expressed that some Colleges and Universities that claimed to offer 'Job Oriented Courses' were in reality making a compromise by diluting the syllabus. He also expressed that a high grade by the NAAC could act as a facilitator for the students to attain good placements. The real worth according to him is achieved only from the recognition the university receives from the society at large.

Prof. S. Swaminathan, former Director, School of Distance Education, Bharathiar University, Coimbatore in his inaugural address suggested the formulation of one-semester courses with two or three written papers, besides practical, for a total of about 500 marks. Students should be able to take these courses before, after or along with the regular degree programmes and apply the knowledge gained in the main subject so that the additional qualification would help them to get a job.

Prof. P.S. Balasubramanian, former Professor and Head, Department of Education, University of Madras delivered the key-note address. He raised various questions related to the need and viability of introducing various job oriented courses. Plenary Sessions on 'Competency Based Curriculum', 'Structure of a Curriculum', 'Curriculum Development Process' and 'Curriculum Evaluation' were conducted by Prof. S. Swaminathan and Prof. P. S. Balasubramanian. Participants of the Workshop worked on 'Writing Competencies for a Scheduled Programme', 'Designing a Curriculum', 'Writing a Curriculum Document' and 'Preparing Tools of Evaluation of a Curriculum'.

Twenty Syllabi were developed for Certificate Courses viz. Software Computing, Algal Culture Techniques, Sericulture, Utilization of Non-conventional Energy Sources, Analytical Techniques in Chemistry, Hardware Maintenance and Network Administration, Computers and Printing Technology (Tamil), Foreign Trade and Management, Social Welfare Administration, Competitive Examination, Medical Laboratory Techniques, Creative Journalism (Tamil), Instrumentation and Home Appliances Servicing, Insurance Business, Bank Management, Modern Social Problems and Remedies', 'Advertising and Salesmanship', 'Office Automation', 'Photography and Videography' and 'Indian Culture Through Ages'. Nine recommendations were made in the Workshop related to development and implementation of syllabi for Job Oriented Courses in Universities and Autonomous Colleges.

Prof. C. Subramaniam, Registrar, Bharathiar University, Coimbatore presided over the valedictory function. In his presidential address, Prof. Subramaniam highlighted the need for approval of the prepared syllabi by different statutory bodies besides the University. He assured that necessary steps would be taken to get the syllabi developed for various Job Oriented Courses approved by Bharathiar University as well as other universities. Prof. S. Subramaniyan, former Vice Chancellor, Bharathiar University, Coimbatore delivered the valedictory address besides presenting certificates to the participants. In his valedictory address, Prof. Subramaniyan, made a survey of the development of Higher Education in India over years. *He also suggested the ways and means of utilizing the* human resources in populous countries like India. Prof. S. Swaminathan presented brief report about the Workshop. Dr. N. Balasubramanian proposed a formal vote of thanks. Recommendations emerged out of the Workshop were:

- It is worthwhile to consider a series of two-day workshops for generating a good number of course designs intended to provide a proper direction to the traditional academic programmes towards making the students employable.
- A short course applying the scholastic subject

(Contd. on page no.22)

Contribution of Funds from Various Sources

In Rs. '000

Sl. No.	1 University / Institution	2 State Govt.	3 Central Govt
1.	Indira Gandhi Krishi Vishwavidyalaya, Raipur	68400	57600
2.	Jadavpur University, Kolkata	373380	87370
3.	Jai Narain Vyas University, Jodhpur	95100	62000
4.	Jamia Hamdard, New Delhi	1379	60372
5.	Jamia Millia Islamia, New Delhi	0	305418
6.	Jammu University, Jammu Tawi	215884	17797
7.	Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur	402300	95300
8.	Jawaharlal Nehru Technological University, Hyderabad	186613	108086
9.	Jawharlal Nehru University, New Delhi	0	381460
10.	Jiwaji University, Gwalior	42800	34800
11.	Kalyani University, Kalyani	135950	600
12.	Karnatak University, Dharwad	61842	9032
13.	Kerala Agricultural University, Trichur	593750	55397
14.	Kerala Univeristy, Trivandrum	218856	27682
15.	Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli	75400	35000
16.	Kumaun University, Nainital	34769	9658
17.	Kurukshetra University, Kurukshetra	144824	[illegible]
18.	Kuvempu University, Shimoga	180000	34000
19.	Lalit Narayan Mithila University, Darbhanga	23127	[illegible]
20.	University of Lucknow, Lucknow	168497	20725
21.	University of Madras, Chennai	133279	43077
22.	Madurai Kamaraj University, Madurai	228000	67200
23.	Maharshi Dayanand Saraswati University, Ajmer	60800	24000
24.	Maharshi Dyanand University, Rohtak	145000	25388
25.	Mahatma Gandhi Kashi Vidyapeeth, Varanasi	37207	[illegible]
26.	Mahatma Gandhi University, Kottayam	205000	9000
27.	Mangalore University, Mangalore	61842	9022
28.	Manipal Academy of Higher Education, Manipal	13338	15500
29.	Manipur University, Canchipur, Imphal	56089	6057
30.	Manonmanian Sundaranar University, Tirunelveli	28186	25100
31.	Marathwada Krishi Vidyapeeth, Parbhani	194200	75000
32.	MJ P Rohilkhand University, Bareilly	71000	[illegible]
33.	Mohanlal Sukhadia University, Udaipur	65300	27200
34.	Mother Teresa Women's University, Kodaikanal	8821	6684
35.	MS University of Baroda, Vadodara	148300	102800
36.	University of Mumbai, Mumbai	206200	82900

ceived by Indian Universities/Institutions (1997-98)–I

4 ustries	5 *Foreign Sources*	6 *Donations*	7 *Own Source*	8 *Others*	9 *Total*
0	0	0	23200	0	149200
0	0	0	0	0	460759
0	0	0	49600	0	206700
0	0	30000	37717	0	129467
0	0	0	26730	0	332145
0	0	0	69719	22412	325812
0	0	0	53900	300	551800
260	200	300	31342	2016	328811
140	3873	0	12286	182190	580949
0	0	0	27100	300	105000
0	0	0	2500	0	139050
100	90	0	105155	10571	187674
2734	1248	40	180977	18654	852800
198	2561	58544	75912	18192	408945
0	0	0	46500	0	157800
0	0	0	0	16549	60923
0	0	158	160353	12759	318094
670	0	2017	40900	4978	262618
0	0	0	0	0	23127
0	0	0	73204	7042	269491
267	1959	481	400636	56222	635875
2000	3900	7600	227400	67260	614260
0	0	0	34000	0	118800
0	0	0	35353	42619	248360
0	0	0	3558	5133	48011
0	0	2180	60782	2500	279462
100	90	0	105155	10571	187674
4310	5678	65557	500007	12296	616755
0	0	0	1841	0	63989
150	0	1200	19900	13400	87936
0	0	0	66500	0	335700
0	10428	0	11979	34831	128238
0	0	0	56700	0	149200
0	0	6879	6863	2580	31827
2000	0	12600	95100	9600	380400
20200	0	5600	160500	100	475500

URCE: National Report on *Quantification of* Manpower and Financial Resources Devoted to Research and Development in Science and Technology from Higher Education Sector-2002, Department of Science and Technology, Government of India, New Delhi.

(Contd. from page no.19)

knowledge in real-life situations can be conducted more as our additional course than as an alternative to the existing programmes.

- Short courses can prepare the students for their livelihood by utilizing the knowledge and skills developed through such efforts which can even transform them into entrepreneurs.
- If such programmes become successful they may be considered as alternatives to existing electives for making academic programmes into socially relevant courses.
- In lieu of the application-oriented courses in the existing programmes which in effect are mere theory-oriented, practical courses developing competence based job-related courses can be designed and offered.
- The Board of Studies of the universities can be approached to approve such courses for being offered in various Colleges.
- In case, such courses are offered as additional self-reliant job-oriented courses in colleges, the universities concerned may approve these courses and endorse the certificates so awarded.
- Some of these courses can even be autonomous courses empowering the Heads or Co-ordinators of the programmes for full financial administration within the over-all powers of the college concerned.
- Extensive efforts be made to spread this message to other organizations for similar efforts including deemed universities and autonomous colleges.

IT@AGRILIBNET-2003

With the support received from the World Bank through National Agriculture Technology Project(NATP), the Indian Council for Agricultural Research embarked upon training the manpower in libraries as a pre-requisite to implement its total library automation and networking programme in Agriculture sector across India. By taking into account of INFLIBNET's training capabilities, NATP authorities selected it as the national level training center for agriculture Librarians in India. The INFLIBNET Centre under the guidance of Dr T A V Murthy, Director, INFLIBNET conducted seven training programs in a series during June-September 2003, under the title "ICAR-INFLIBNET Training Program for Agriculture Librarians on Networking and E-Resources Management --- IT@AGRILIBNET-2003 <mailto:IT@AGRILIBNET-2003>" of two weeks duration each, specially designed for Agriculture Library professionals from Institutes and Universities. The Course contents and topics were identified and were selected in consultation with senior librarians from Agriculture sector and INFLIBNET technical staff, keeping in view the objectives of the programme, i.e., awareness building of the technologies and nurturing IT culture in Agriculture Librarians. The following broad topics were selected in which specialized INFLIBNET Faculty delivered comprehensive lectures and conducted practical sessions in the areas of: a) Basics of Computer and Hardware/Software, (b) Planning for LAN in Libraries, (c) Networking Security Issues, (d) Mail Server and Web Server Configurations and Applications, (e) Library Management Software Systems and SOUL, (f) Website Designing and Hosting, (g) Creation of Digital Libraries Using Green Stone, (h) Impact of INTERNET and Identification of Resources, (i) INTERNET Resources and Gateways for Agriculture Scientists and (j) Design of a Model Agriculture Information System.

Topics related to experiences in Library Automation, Digital Library Creation and Networking were also deliberated. Study tours to different libraries to understand the proper deployment and implementation of modern technologies were also arranged for the participants. The participants were asked to make presentation on the projects like - 'Library and its services', 'SOUL Software - all the Modules', 'Designing of Library Website', 'Creation of Digital Library using Green Stone Software', 'Searching and Identification of Internet Resources'.

The first training programme in the series was held in conjunction with the inauguration of Workshop on 'Website Designing and Hosting'. Dr Edward Proctor, Electronic Resources Librarian and Assistant Professor, Southwest Missouri University, USA, inaugurated the function. He reminded the library professionals to accept the challenges and make face shift of their libraries by adopting the latest technologies and appreciated the efforts taken by INFLIBNET to train the working librarians in this direction. Dr. T A V Murthy, Director, INFLIBNET, Dr. S P Jain, Librarian, GBPAU and Ms. Swathi Bhattacharya, Librarian, IIM-Kolkata also spoke on the occasion. Prof. W A Alvi of Kashmir University delivered the concluding remarks.

Shri S M Salgar, Senior Scientist of INFLIBNET Centre inaugurated the second batch and also concluded it. The third batch was inaugurated by Shri S M Salgar and key-note address was presented by

Dr K H Shukla of M S University of Baroda. Dr. T A V Murthy, Director, INFLIBNET Centre distributed the certificates to participants. The fourth batch inaugural function was held in conjunction with the inauguration of 'ICAR-INFLIBNET Workshop' for Senior Agricultural Librarians on IT Management' and 'SOUL Training Programme on Installation and Operations'. It was inaugurated by Dr. R P S Alhawat, Vice Chancellor, Gujarat Agricultural University, Anand. Dr. T A V Murthy, Director, INFLIBNET Centre also spoke on this occasion. Shri S M Salgar, Senior Scientist of INFLIBNET Centre inaugurated the fifth batch. Participants attended the Librarians Day Celebration and Seminar on 'Trends in Librarianship'. Ms. Ela Joshi, Deputy Director, EMRC, Ahmedabad also spoke on this occasion. Shri S M Salgar, Senior Scientist of INFLIBNET Centre inaugurated the sixth batch. Shri Sathish Despande, Manager, British Council Library, Ahmedabad concluded the programme. Dr. T A V Murthy, Director INFLIBNET Centre inaugurated the seventh batch. Shri S M Salgar, Senior Scientist, INFLIBNET Centre distributed the certificates to the participants. Ms. Ilaben Joshi, Deputy Director, EMRC spoke on the occasion. A total of 127 participants attended the Course from 86 different institutions. Dr. T A V Murthy was the Course Director and Mr. K Prakash and Mr. J K Vijayakumar acted as the Course Coordinators for the entire series of IT@AGRILIBNET-2003.

Talk on Emerging Youth Power

An academic programme in the form of Fortnightly Seminar Series is being organized by the North Eastern Hill University (NEHU), Shillong. In this connection a forum called Fortnightly Seminar Series Forum was formed in the University. His Excellency Shri M M Jacob, Governor of Meghalaya delivered a talk on 'Emerging Youth Power' in one of the sessions of the Series. Dr. A K Kundu, Deputy Librarian, NEHU, Tura Campus apprised the participants about the aims and objectives of the forum. He said that the forum is for the intellectuals to put forward their ideas on socio-economic, educational, societal and other relevant issues for uplifting the society and redressing the problems of the society.

In his welcome address, Prof. S S Khare, Pro Vice Chancellor, NEHU, Tura Campus highlighted the developments taking place in the Campus. His Excellency Shri M M Jacob was of the opinion that the ideas of such forums should reach the society. He assured all possible help for the purpose. In his talk he emphasized that youth power is the biggest power and if it is rejuvenated we may get miraculous results. He gave the example of USA, Germany and China and how their youth worked for the nation development and made their countries super power of the world.

He gave a clarion call to the teaching community to ignite the youth in developmental work so that they shun violence and join the mainstream for the nation development. "Garos are very hard working people and in no way they are inferior to anybody and they can bring a sea change if motivated properly," he said. He quoted from Aristotle, Socrates and Panchatantra where there was a mention about the youth power. "They are the pillars of nation and they should be used in a better and judicious way for the uplifting the society," he said. Vote of thanks was proposed by Prof. P K Gupta, Head, Department of Education.

IQAC at Nagarjuna University

As a measure of post-accreditation quality sustenance the Nagarjuna University, Nagarjunanagar, Andhra Pradesh acceredited with B++ grade by National Assessment and Accreditation Council (NAAC), Bangalore has created an International Quality Assurance Cell (IQAC) as per the guidelines of NAAC. Prof. V S Prasad, Director, NAAC inaugurated the IQAC Cell. Prof. L Venugopal Reddy, Vice Chancellor, Nagarjuna University presided over the launching function.

A Quality Advisory Committee consisting of 22 faculty members and senior officers under the Chairmanship of the Vice Chancellor was formed to monitor the quality enhancement activities and guide the IQAC. An interim quality assurance report of IQAC was also presented to the Director, NAAC during the inaugural function. The broad activities identified by the Cell towards quality enhancement in the academic year 2003-04 are as follows:

- To bring in certain innovations/changes in the existing curriculum/teaching.
- To streamline Research admissions/regulations to encourage extramural, interdisciplinary and socially relevant research work and to increase the size and quality by providing better lab and other facilities (NSP Central Lab activities).
- To improve physical and academic infrastructure facilities.

- To establish collaboration with premier institutions for curriculum development and enhancement of research potential.
- To encourage teachers to organize more number of seminars/workshops, and participate in national and international conferences to procure more funds for diversification of research activities.
- To generate international financial resources.
- To encourage the departments to get schemes such as COSIST, SAP and DRS.
- To improve library services.
- To offer training programmes to non-teaching staff and to improve their administrative and office automation skills.
- To introduce needy reforms in the existing examination system.
- To accelerate career guidance, counseling and placement services for the students.
- To activate Alumni and Teacher-Parent Associations to improve quality of student-days.

The University also initiated some other programs on this occasion including inauguration of 'Earn While Learning', inauguration of 'Boys Hostel', Plantation Programme, Release of University Newsletter, Students' Handbook and M.Com Study material for the students of Distance Education.

Symposium on Art & Culture

The Bengal Fine Arts College, Chandpara, West Bengal, organized a Symposium on Art & Culture at the college premises recently. The eminent painter Sri Ganesh Haloi, Sri Ajit Chakravorty, Sculptor, college teacher Sri Samir Ghosh and Sri Debnarayan Debnath, the principal of the college participated in discussion.

"Art and Society" was the main topic of the Symposium. All the speakers emphasized the social responsibilities of the artists. Being in a particular social perspective, artists should reflect social behaviour in accordance with his imagination and observation. The vocabulary of the artists may be personal but his approach should be national. Nearly Seventy participants attended the Symposium.

Infringement of English on Garo Language

Keeping in view that it is the duty of teacher, not only to induce his student to studies, but also to arouse in him enough inquisitiveness and curiosity to take up research works, the Department of English, Tikrikilla College, Garo Hills, Meghalaya organized a Talk on the 'Encroachment of English on Garo Language', under Extended Academic Activities (EAA) Programme. Shri M.A. Sangma , Lecturer, Department of Garo, Tikrikilla College was the Resource Person. Sh. N.B. Gaire, Principal of the College was Chief Guest of the function.

Shri. D. Mishra ,Head, Department of English in his welcome address highlighted the objective of the Programme. He expressed his hope that launching of EAA on monthly basis shall definitely benefit the student. Shri. Gaire detailed the various programme measures taken up by the college for the benefit of the students and asked them to make best use of the activities.

Shri Mishra maintained that Language is a living thing and has its own dynamics which account for the growth and development of it. The Talk therefore was planned to sensitize the students on this aspect and induce them to take up research work in future. The discussion ranged on the two hundred years long British dominion in India and its influence on political, social and economical life of the people and focused on various reasons leading to unaware or aware impact of English words in Garo Language. The deliberations centered on

- English being the language of the ruling class.
- English being the medium of instruction.
- New discoveries, inventions, science & technology.
- Religion - coming of European Missionaries.
- Coming of new thoughts and new ideas.
- Inherent deficiency/reluctance of a language to fill up the void formed due various factors.

While citing hundreds of examples of English words being conveniently used in Garo, Sh. M.A. Sangma tried to elicit the reactions of the participants and encouraged them to contribute some such English words currently in use in Garo. The participants enjoyed the joy of rediscovering their own language.

National Seminar on System on Chip

A three-day National Seminar on 'System on Chip' was organized recently by the Shanmugha Arts. Science, Technology and Research Academy (Deemed University), Thanjavur. Dr. K S Chari, Senior Director and Head, Microelectronics Division, Ministry of

Information Technology, New Delhi inaugurated the Seminar. "Though the performance increases tremendously according to Moore's Law, still the battery capacity is low," Dr.Chari said in his inaugural address. "A 'Chip' is a device which processes various functions and stores specific information in a larger quantity and which has minimum size. As early in 2001 we have invented a Chip with a capacity of 100 billion transistors. India is having adequate expertise for increasing the capacity of Silicon Chips. Though India has eminent personalities, resources, bright and talented young students for contributing their expertise in the field of Chips, the manufacturing is very meager," he added. He also explained various developments taking place in the field of Microelectronics, its evolution, trends and future opportunities etc. Mr. Grant Martin, Cadence System, USA delivered a lecture on 'Design Flows for IP Integration' through Video Conferencing mode.

While welcoming the gathering, Prof. K Ushadevi, Co-ordinator and Dean, School of Computing gave a brief note about the topics of the Seminar which included Design Flows for IP Integration; Smart Sensors and System of Chip; Design for Test Considerations in SoC; SoC Design Methodologies; Modelling and Stimulating SDR Systems (Software Defined Radios) using MATLAB and Simulink; Embedded Systems for SoC; Challenges to SoC; Designers for Wireless Communication Applications; Embedded Systems Design; Emerging Trends in 4G Wireless Technologies; Impact of Nanometer Related Timing Failures on At Speed Testing etc. There was a panel discussion on 'Challenges of SoC'. The experts of the discussion were Dr. K S Chari. Dr. C P Ravikumar, Texas Instruments, Bangalore, Dr. Sunil Sherlekar, Tata Consultancy Services, Bangalore and Dr. Neelakantan, Ether-Act Software Laboratories Pvt. Ltd., Bangalore.

About 130 delegates from various parts of the country participated in the National Seminar sponsored by the Department of Information Technology, Ministry of Information Technology, Government of India and organized by the TIFAC-CORE of SASTRA Deemed University. Prof. R Kandaswamy, Registrar presided over the function and Shri R. Muthiah, Senior Lecturer, School of Computing, proposed a vote of thanks.

Common Entrance Test for MCA

Admission to the Master of Computer Applications Course across India will reportedly be made through a common entrance test starting next June, according to an announcement made by the National Advisory Board for AIMCET chaired by Shri S K Tripathi, Secondary and Higher Education Secretary, Ministry of Human Resource Development, Government of India. The first All-India MCA Common Entrance Test for the academic year 2004-05 would be held on June 6, 2004, in 98 cities across the country.

The test would be conducted by the Indian Institute of Technology, Roorkee. It would be for institutions presently holding their separate entrance tests and admitting students, all or a proportion of them on all-India basis, the statement said. States would, however, continue to hold their own common entrance tests for admission to the Course, it added.

Visva Bharati—California University Tie-up

An MoU was signed between Visva Bharati, Santiniketan and the University of California, U.S for setting up a Bengali Department at the Berkeley Campus of the University. According to the MoU, the Visva Bharati will provide complete intellectual support for the Course. The Visva Bharat has agreed to loan its resource persons to the University of California for purpose.

A Chair has been created at the Berkeley Campus for a visiting lecturer from Visva Bharati, on a four million dollar endowment fund by the University of California. The Bengali Department of Visva Bharati will prepare the syllabus. The Bengali Department will be part of the East West Studies Centre of the University of California. Students have a choice of learning several oriental languages at the University but the only other Indian language that was taught so long was Hindi.

Biological Journal on Internet

A Journal called the Public Library of Science Biology was launched on the internet recently by Harold Varmus, former Director of the National Institute of Health and Chief Executive Officer of Memorial Sloan-Kettering Cancer Centre in New York. The Journal will speed up the pace at which research is published, and will also make it accessible to the poor graduate students. It will be available on the Internet at <http://www.plosbiology.org>.

Transgenic Green Mouse at IISc

Scientists from the Indian Institute of Science, Bangalore have developed a 'Transgenic Green Mouse' using green fluorescent protein found in jelly fish. The Transgenic Green Mouse could be a model for conducting future cell-transplantation studies. "The reason why we use the protein is that you don't need a fluorescent dye or any kind of tracking mechanism to visualize. This protein, by itself is florescent green," said Prof. P B Seshagiri of Department of Molecular Reproduction Development and Genetics at the Indian Institute of Science.

The first transgenic green mouse in the country was developed early this year by the scientists and several mouse lines have been generated. "If you have this protein in a cell, the cell will be green and wherever you have the protein, whether in a cell, membrane or an organ that particular region will also be green," he said. Prof. Seshagiri said that it took about three years to create the infrastructure for the project and about four to twelve months in generating animals.

Citing an example on how the green fluorescent protein could be used in cell-based therapy, he said, "a diabetic patient who could develop resistance to insulin may be administered an insulin generating cell to reach the pancreas and find whether it reaches the organ and its progress".

Workshop on Engineering College Libraries

Department of Information and Knowledge Services, Sanketika Vidya Parishad Engineering College, Vishakhapatnam organized a one-day Workshop on 'Engineering College Libraries - Strategies for Effective Management'. Dr. Gopala Krishna Reddy, former Vice Chancellor, Andhra University and Chairman, Sanketika Vidya Parishad Engineering College, while inaugurating the Workshop stressed the need for close cooperation between the Engineering Colleges located in and around Visakhapatnam to minimize the expenditure on book collection and journal subscriptions.

Prof. R V Rama Rao, Principal, Sanketika Vidya Parishad Engineering College, in his presidential address stressed the need for application of IT in information storage, and dissemination. He opined that the digitization of information centers is preliminary and they have to adopt the advanced techniques such as data warehousing, data mining etc. He shared his experiences in developing GIS, GPS and association with INFLIBNET and suggested to develop such a project among the Engineering Colleges and share the resources. He emphasized the need to select, store and retrieve the vast information in electronic form, citing example of newspapers.

Prof. S S Janardana Rao, Head, Information Sciences and Knowledge Services Division and Director of the Workshop while unleashing the theme of the Workshop sought the cooperation of all the Engineering College Libraries to join as a consortium to subscribe to different Foreign Journals to effect economy and efficiency in Library Services. Prof. B Ramesh Babu, Department of Library and Information Sciences, University of Madras, Chennai, in his keynote address dwelt in length the advantages of digital libraries in the context of the Information Explosion.

Prof. R S R Varalakshmi, Head, Department of Library and Information Sciences, Andhra University, Visakhapatnam, chaired the technical section in which she explained the intricacies of data mining and data warehousing. "Data Warehousing and Data Mining aspects are more applicable to Information Scientists. In fact the University Libraries in USA are working out on a number of projects in data mining. Indeed they formed that the data mining techniques of categorization coding, filtering and retrieval are similar to the information processing techniques such as classification. In India research is being carried out for the application of data mining techniques in Bibliometric Analysis called 'Bibliomining'. Dr. K Somasekhara Rao, Department of Library and Information Sciences, Andhra University, while chairing the second technical session wanted all the librarians to join together and suggest ways to cut short the expenditure on purchase of books.Mr. T C Chakravarthy, gave a presentation of the library software package and explained the salient features of LIBMAN (A professional product) developed by him.

Marketing Management Course at IIT Bombay

Indian Institute of Technology Bombay, Mumbai has recently launched a comprehensive management programme for professionals. It is a one-year course in Marketing Management conducted by the Institute's Continuing Education Programme (CEP). The programme would be conducted by faculty members from Shailesh J Mehta School of Management, IIT (Bombay). Professionals from the industry will also deliver lectures.

Modules of the Programme include courses in industrial and services marketing, business management, marketing research, sales management and marketing strategy among others. Coordinator of the programme, Prof. Sanjaya S Gaur, said, "the programme has been specially designed for the employed students who are part of the industry work-force but do not have any formal qualification in management. The Course has been created to hone their skills, help them specialize in high quality marketing management and orient them for corporate world". "It is a comprehensive course including all the concepts in a single course. The curriculum will cover as many as 21 papers drawn from every aspect of management," he said.

The Course for which participants will have to pay Rs. 65,000 each, will cover 200 sessions in 52 days. Classes will be held every fortnight and the certificates will be awarded following evaluation through a comprehensive examination at the end of the programme.

News from Agricultural Universities

Kapas Mela at CCSHAU

A Kapas Mela was organized recently by the Cotton Research Station of CCS Haryana Agricultural University, Hisar. The Haryana Chief Minister, Hon'ble Shri. Om Parkash Chautala was the Chief Guest of the inaugural function of the Mela. In his inaugural address he urged the farm scientists to develop disease resistant varieties of crops to make farming more remunerative. He said that the problem of pests on crops had taken serious turn with the resistance acquired by most insect-pests against insecticides. He said that another problem impeding farm production as well as income of the farmers was declining soil fertility due to imbalanced use of fertilizers. He emphasized the need of organic farming and urged the farmers as well to divert to cash crops like cotton, sugarcane, pulses, floriculture and horticulture.

Shri Chautala said that his government's priority had always been to give more facilities to the farmers so that they become prosperous. He informed that his government had given higher price of Rs. 110 per quintal for sugarcane. Likewise the purchase of other crops had also been ensured. He also informed that the Central Government was planning to raise the content of ethanol in petrol from present level of 5 per cent to 10 per cent. Since, ethanol was a by-product of sugarcane industry the demand for sugarcane would also increase.

Shri Chautala also stressed the need for crop diversification. Citing an example, he said that a few farmers in Rajasthan who had taken up cultivation of medicinal herbs were earning Rs. 25 lakh per acre. He also exhorted the farmers to adopt dairy farming. He revealed that the State Government had set up Livestock Development Board to give impetus to high yielding breeds of milch animals and also started their insurance. He said that at present 50 per cent of the premium was paid by the Board while rest had to be borne by the owner. "With the decision of the Supreme Court in favour of Haryana, the SYL Canal would be completed soon and more agriculture land would receive irrigation and add to the prosperity of the farmers," he said. The Chief Minister said that his government was treading the footsteps of Ch. Devi Lal who was working for the welfare of the farming community. He appealed the farmers to support to his government and receive ever best of their package of facilities.

Speaking on the occasion, HAU Vice Chancellor, Mr. M K Miglani said that the Varsity proposes to make Sirsa district as Cotton Seed District. He said that the Cotton Research Station of the University located here had contributed a great deal in improving economic condition of the farmers by giving them various high yielding and disease resistant varieties of cotton. He said that the varieties HS-45, HS-6, DS-1, DS-5 and hybrids HHH-81 and HH-223 of cotton had already been developed and grown by the farmers, while efforts are afoot to evolve a variety with strong and long lint which would help the farmers to compete in the world market. Shri. Chautala gave away a draft of Rs. 10 lakh to the Panchayat of village Kharia for the best development work done in the village.

Fulbright Foreign Language Teaching Assistantship Programme

The United States Educational Foundation in India (USEFI) has announced its the Fulbright Foreign Language Teaching Assistant (FLTA) Programme for interested Indian nationals, between 21 and 29 years of age, currently teaching English at college level or training to be teachers of English. Applicants should possess by August 2004 at least a Master's degree. Selected FLTAs from India will teach Hindi, Bengali and Urdu at select US campuses during their 9/10 month grant beginning August/September 2004.

The FLTA Program is funded by the US Department of State through the Partnerships for Learning Initiative (P4L). The Purpose of the FLTA Program is to strengthen the instruction of foreign languages at U.S. colleges and universities while providing future teachers of English from countries with a significant Muslim population with the opportunity to refine their teaching skills, increase their English language proficiency and extend their knowledge of the cultures and customs of the United States. FLTA fellows also interact with the host community in conversation groups, extracurricular activities and community outreach projects. India is one of the 22 countries participating in the 2004 competition.

All FLTA fellows receive a monthly stipend, health insurance and travel support. U.S. host institutions provide tuition awards to support the required coursework. The FLTA programme does not provide J-2 visas for spouses or dependents. The FLTA program promotes cross-cultural understanding in the U.S. and in the home countries of the FLTA fellows. U.S. universities benefit from the presence of a native speaker on their campuses. FLTA fellows teach up to two language classes and typically live in language dorms and facilitate language clubs. Fellows and U.S. students have a unique opportunity to learn about each other's cultures and customs, and to build mutual understanding between the U.S. and countries with a significant Muslim population. Applicants must meet the following eligibility criteria:

- Be citizens of India and hold a valid Indian passport. Persons applying for or holding permanent residence in the United States are not eligible. Fulbright fellows enter the US on an exchange visitor (J-1) visa and are subject to the two-year home residence requirement associated with J-1 visa.
- FLTA applicants must be no younger than 21 and no older than 29 at time of application.
- Applicants must clearly demonstrate maturity, dependability, integrity and professionalism.
- Ideally, FLTAs are outgoing and dynamic individuals with a great sense of humor.
- Fluency in English is mandatory. A score of no less than 213 (CBT) on the TOEFL is required.
- Candidates should possess the equivalent of a Bachelors degree (U.S.) with a good academic record. Indian applicants should have at least a Masters degree.
- Applicants must be English language teachers at the college level or training to become English language teachers.
- Prior Teaching experience is preferred.

FLTA candidates must be enthusiastic about teaching. They must have a sincere interest in teaching their native language and culture to American students. Through their application they should demonstrate knowledge of their culture and current events in their home country. They should have leadership skills, the ability to motivate students and the ability to relate to them in an emphatic manner. FLTAs should have a desire to meet people and become a part of the community by participating in community events and campus activities. They should be able to work creatively, be self-reliant but good team players who maintain excellent relationships with faculty staff and students. Many institutions request FLTAs who have an interest and ability to live in small towns or are adaptable to living in rural areas. They request that their FLTAs have excellent organizational and computer skills. They prefer people who have interests in sports, outdoor activities, music, dance, theatre, literature, poetry or cooking. Most of all, they look for candidates who demonstrate flexibility and a willingness to learn.

Interested Indian applicants, residing in India, can obtain application materials either in person at any of the USEFI offices <http://www.fulbright-india.org/about offices.htm> or by sending requests to USEFI, 12 Hailey Road, New Delhi 110 001, along with a self-addressed stamped (Rs. 25) 10"x7" envelop. To receive the forms as an email attachment in MS word format send request to lakshmi@fulbright-india.org <mailto:lakshmi@fulbright-india.org>. All Indian applicants may complete the specific Fulbright/FLTA Scholar application form <http://www.fulbright-india.org/forms/FLTA-appform.doc> and submit it along with required enclosures to USEFI, Fulbright House, 12 Hailey Road, New Delhi 110 001, by December 29, 2003. Applications sent directly to Institute of International Education (IIE) will not be considered. The letter of reference should be sent directly to USEFI on the prescribed Confidential Letter of Reference forms, by the same date. Employed applicants need to submit their applications through proper channel by the deadline. ☐

Free Net for Varsities Scheme of UGC: Critical Issues

On the occasion of its golden jubilee year UGC has decided to provide Internet access for every student and teacher in Universities across the country. The UGC chairman Prof. Arun Nigveker has proposed following initiatives to fulfil this dream :

(i) Universities across the country will have access to free Intranet (across colleges) and Internet during next five years.

(ii) The project will connect Universities through an information highway running across the country.

(iii) A mixed basket of technology will be used to connect different Universities including dial-up, satellite, V-set and terrestrial mode depending on their location.

(iv) The commission will provide VSNL connectivity to 5000 affiliated colleges.

(v) The sixteen digital repositories will be created to store foreign journals and multimedia teaching material.

(vi) Instead of providing grant to Universities for purchase of Journals, UGC will negotiate with foreign journals for " bulk electronic subscription with multiple user licence".

(vii) Teachers to be trained to generate multimedia teaching material.

The above proposed initiatives of UGC are a welcome step and it will certainly enhance the reach and quality of education. To achieve these objectives, successful implementation of this scheme is must. How this scheme will be introduced is a question for thought for academicians? The UGC did not provide the mechanism and modalities to implement this scheme. Therefore, it is difficult to know that in which way this scheme will be implemented. On behalf of these observations, an attempt has been made at personal level to analyse those issues and challenges which are vital for success of this scheme. Besides, an action plan to deal every issue has also been proposed.

Selection of Institutions

According to the declared scheme, UGC will provide VSNL connectivity to 5000 affiliated colleges. It is general mentality amongst us that we like to take anything that comes free without thinking that it is usable or not. The academics have this tendency as most because they gather free literature in bulk (during seminars, conferences, meetings, etc.) without thinking that whether they will actually need it. Our institutions are also not free from this mentality. By seeing the 'free tag' every institution will be eager to come under this scheme. To avoid this situation, UGC will be required to make a careful plan to select potential and deserving institutions.

Suggested Action Plan

To grant this scheme at universal manner, UGC can take a simple step. One college from each district of every state may be covered under this scheme. The institution may be selected on the recommendation of directorate of higher education of that state which will be based on the available infrastructure and academic potential of institution. The selected institutions may be declared as nodal institutions with internet facilities. The facilities of these institutions may be used by students/teachers of other institutions of same district by showing their identity and need. This measure will ensure the reach of this scheme in cost effective manner. After ensuring this, the UGC can offer this scheme to additional institutions. The implementation of this plan will help the UGC to select good institutions to provide internet and intranet connectivity at national level.

Provision of Infrastructure

Under number of schemes / projects, UGC provides equipment and machines worth cores. Unfortunately, most of these equipment / machines are either unused or less used in majority of institutions. The reason behind this situation might be that UGC did not bother to assess the ground situation before providing the grant. UGC will be required to provide a huge infrastructure (computers, printers, UPS, etc.) to carry out this scheme. If UGC provides the infrastructure to colleges without assessing the real situation and needs then this scheme may also meet the same fate. The following action plan may help the UGC to overcome this issue.

Suggested Action Plan

This plan begins with the assumption that now-a-days every higher education institution has some PC's under various central / state government scheme. Keeping this in mind, UGC may select only those institutions at first phase that already have some PC's. At initial level the provision of five PC's for every institution can be made. From these five PC's one may be given to the Principal, one to library and rest three to common networked centre. If any selected institution did not have the suggested number of PC's (5) only then UGC will be required to act to provide the grant for the same. One other step may be taken to provide infrastructure. Majority of Universities and technical institutions have unused old PC's. Most of these PC's have required configuration to run the internet. Besides, these PC's can also be upgraded. These institutions may be asked to donate old but usable PC's to those institutions selected under UGC scheme by providing central / state level directives.

Maintenance Aspect

The major concern about this scheme is that whether selected institutions will be able to maintain large quantity of infrastructure. The traditional approach of UGC is that it provides recurring grant for maintenance purpose. This approach will put severe financial burden on UGC. This situation demands an effective and economical way to tackle maintenance issue. The following plan can be tried to solve the issue.

Suggested Action Plan

UGC will be required to collaborate with AICTE to tackle maintenance issue. Some reputed engineering / technical institutions having computer and IT based courses can be identified as nodal centre for maintenance purpose at every state. The experts from these centres will be required to check and attend the complaints made by institutions under UGC scheme. Instead of giving maintenance grant to colleges these centres may be given yearly maintenance grant. The basis of this grant can be the number of colleges visited and actual work done by the experts. The experts designated to visit and maintain the equipment may also be paid TA / DA. This provision may help the colleges to get maintenance work in effective and efficient manner.

Training of Teachers and Students

This scheme is directed mainly to offer internet facility to large number of teachers and students. They are expected to have following competencies to get maximum benefit of this scheme:

(a) knowledge about word processing, data base, e-mail and CD-ROM.

(b) the use of net to search and find relevant information for teaching learning tasks.

(c) the ability to upload and down information on net in a variety of forms - written, statistical, graphics, etc.

(d) the use of net to analyse, present and communicate information to create knowledge and insight.

(e) the use of net to create net works of co-learners in the pursuit of knowledge and information sharing.

Our teachers and students are required to be trained about these aspects. This will be a Herculean task to train the teachers and students of 5000 institutions. Training of such a large number of teachers and students will require lot of time and money. The UGC can work on following plan to tackle this issue.

Suggested Action Plan

The UGC can select five reputed IT institutions from every state as nodal training centre. The number of nodal training centre may be increased as per the geography, population and number of colleges selected from the state. From every college one teacher and two students from each faculty may be provided training in these nodal centres. The training period may be of one month. Teachers and student can be provided study leave to attend the training. UGC will require to bear boarding and lodging expenses of these trainees. After getting this training, the trainees will be required to act as trainer for other faculty / students of their institutions. This scheme will require only one time investment afterwards me theory of one lamp brightens another will work.

Popularisation of Net Use

Today's educational institutions are living into an information age. The impact of the information processing technologies for educational institutions are manifold. Therefore, it is necessary that our teachers and students should be helped towards an understanding of the technological innovation and change in educational practices. It will help them to plan for their own professional / academic development. The attainment of this objective requires a change in mind set of our teachers and students. The institutions

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BOOK REVIEW

A Fine Monument

Amal Kumar Mishra
((P G Department of History, Utkal University, Vani Vihar, Bhubaneswar-751004))

L P Shah, (2002), Freedom of India 1857 and 1919-1947 Movement, Pune, Author, 356 pp., Rs. 1000.00 (Paper back).

India, a land of variety and tradition, came under British occupation starting from 1757. In that year the colonisers became able to subjugate only one Subah by the conquest of Bengal after winning 'Battle of Plassey' but that event increased their appetite for more and one sees the whole of India coming under their grip by 1818 following the victory achieved over the Maratha groups in the Third Maratha War. The British empire in India stood transformed as the British empire of India. The fissiparous tendencies had been active for a long time and the degeneration of the Mughals and Marathas helped the cause of foundation of British rule in India. The foreign rulers went on perpetrating so many policies and plans of action which weighed heavily on the people of this country till the self-sufficiency of the Indian villages broke down facilitating the import and supply of finished products from Britain to the Indian market. The drain of wealth from India to Britain cost very dearly to the hapless people of the country. The once famous land of gold that was India in the ancient and medieval times lay prostrate at the feet of the merciless colonial masters who bled it white. Thus the life -blood of the nation ebbed away.

But there was a limit and one observes the people of India taking up their cause during the 'Movement of 1857'. It is here the present volume starts depiciting the pictures in good colour covering the epoch-making events of 1857 with brief but very modest descriptive captions under each frame. Starting from the view of the palace at Delhi, otherwise known as the 'Lal kila', to the view of Calcutta of the British period from Chowringhee and then the scene at Barrackpur where Mangal Pande earned the name as a martyr-each one of the pictures is just breath-taking and holds the viewers and readers alike to his/her seat till the volume is completed. The picturisation of momentus events at Behrampur, Meerut, Delhi, Peshwar, Ferozpur, Sialkot, Agra, Allahabad, Lucknow, Kanpur, Fatehpur, Gwalior, Bithur, Bareilly, Danapur, Jhansi, Kalpi is just superb and evokes a sense of high patriotism besides providing a lot of historical information regarding the progress of the 'Movement of 1857'. It failed in its objective no doubt but the fact remained that the numerous martyrs who laid down their lives for the cause of freedom definitely wrote a golden chapter in the history of Indian freedom struggle by their blood and sweat. Their endeavours however did not go waste since India was to witness another round of freedom struggle very soon under the nationalist phase.

The second part of the volume covers the freedom movement in India from 1919 to 1947 with so many vivid illustrations, and captions under each frame like the first part. During this phase i.e. the nationalist phase freedom struggle progressed in a more constitutional manner avoiding direct fights, clashed, fisticuffs of any sort. The reason was not far to seek. The Indian National Congress which was organised in 1885 at Bombay slowly emerged as the mouthpiece of the entire nation. Guided by eminent leaders like Surendranath Banerjee, Badruddin Tyabji, Pheroz Shah Mehta, Bal Gangadhar Tilak, Lala Lajpat Rai, Bipin Chandra Pal it became the centre of attraction or the people of India with a great mass appeal. Mahatma Gandhi who arrived in 1915 from South Africa infused a new spirit into it and cast a spell on all those freedom fighters who hence-forward became known mostly as Gandhians. Hence, the freedom struggle from 1919 onwards is Justifiably called as Gandhian freedom struggle where there was no place of violence. Importance was laid on truth (Satya) and non-violence (Ahinsa) like nothing before. Here, the viewer is treated with a number of pictures with captions below each one of them telling the march of events during the epoch-making 'Gandhian Era'.The incidents at Amritsar following the Jallianwala Bagh massacre of 1919 have been beautifully captured in pictures of Dr. Satyapal, Dr. S. Kitchellew, Rev.C.F.Andrews, Uddham Singh et al which are enough to rekindle a nostalgic feeling in us about our own past and at the same time provide an opportunity to learn from them. Following this the depiction of Khilafat, Non-cooperation, Civil Disobedience and Quit India Movements in pictures with captions beneath then are very captivating as well as informative in nature.The involvement of the nationalist leadership like Gandhiji, Pandit Nehru, Sardar Patel, Maulana Azad, Sarojini Naidu, Khan Abdul Gafar Khan, Rajendra Prasad, Vinoba Bhave, Asaf Ali, Bhula Bhai Desai etc., have been dealt with in good measure.

So also the 'Revolutionaries' like Ashafaque Ullah Khan, M.N.Banarjee, Sardar Bhagat Singh, Batu Keshwar Datta, Rajguru, Sukhdev, Jatin Das, Hari Kishan, Surya Sen, Chandra Sekhar Azad are found in nice portraits highlighting their roles in the attainment of India's freedom. Indian National Army (Azad Hind Fauz) and Subhas Chandra Bose regarded as Netaji have also been projected well. The freedom of India did not come without a pang. That was the partition of Greater undivided India which resulted in so many communal clashes and violence. The volume tries to capture the mob violence of this period by showing pictures with captions below them along with the exodus of refugees. And finally the 'tryst with destiny'- the freedom of India and that's all.

All said and done, the volume under study is a fine monument and very interesting viewing as well as reading material. It not only incorporates the saga of the freedom struggle in India belonging to both pre-nationalist and nationalist phases but also endeavours to inculate the spirit of those days in the viewers and readers. Full of illustrations in good colour prints one comes across many hitherto unseen pictures of that bygone era of our past. The captions given below each frame are Just, precise and to the point. On the whole, the work is a superb one deserving commendation from all quarters particularly for its great usefulness and the new approach to the study of India's freedom struggle. ❑

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covered under this scheme will require to put efforts for effective use of net facilities for academic, research and extension activities. The following plan can help in this direction.

Suggested Action Plan

The selected institutions may be asked to present different academic, informative and administrative data on net They may be asked to create a website showing various details about institution like faculty, courses, enrolment, research strengths and possible collaborative academic ventures. This effort will make the institutions as part of net world and people sitting in farther places will be able to know about them. These measures will certainly create a net culture among teachers and students. Whereas, UGC can sent various circulars, directives and scheme to these institutions via net. This step will reduce the paper and postal cost and catalyse the institutions for frequent use of net for academic and administrative purposes.

Evaluation of Academic Gains

The success of any scheme depends on its through evaluation and feedback. Evaluation is a complex and challenging task mat uses appropriate methods to consider the process, outcomes and effects of actions or intentions. To evaluate the academic gains through this scheme following plan may be adopted.

Suggested Action Plan

The institutions may be asked to report about major academic activities performed through net. They may also be asked to submit e-report about gains on half yearly basis. Besides, it can be make mandatory for institutions to train their whole faculty use of net in teaching learning and other academic activities. That institution who obtains these feet can be provide "IT literate faculty status". The help of NAAC can be sought for this purpose. It is fact that free net scheme cannot change the mindset of teachers and students immediately.

Conclusion

Professional and technological development of all staff and students is the vital component of free net for varsity's scheme. The main aim behind this is to provide an atmosphere and facilities to enable them to explore net world for various academics and research activities. The success of this scheme will certainly improve the teaching, learning and research standards of our institutions. The above discussed issues and suggested action plans are a humble attempt to support the successful implementation of this scheme. ❑

Pradeep Kumar Misra
M J P Rohilkhand University
Bareilly-243 006 (U.P)

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities (Notifications received in AIU during September-October, 2003)

SOCIAL SCIENCES

Commerce

1. Ahmed, Minhaj Iqbal. **Tourism development in Agra: A critical analysis of marketing strategies.** (Prof M Mushtaq Ahmad). Department of Commerce, Aligarh Muslim University, Aligarh.

2. Al-Fadel, Osama Subhi Ali. **Tourism management in Jordan since 1991.** (Dr S Husain Ashraf), Department of Commerce, Aligarh Muslim University, Aligarh.

3. Azad, Imran. **Pattern of foreign direct investment (FDI) since economic liberalisation with special reference to information technology.** Department of Commerce, Aligarh Muslim University, Aligarh.

4. Chantarungsri, Chariyada. **Performance appraisal of *Charoan Pokphand Feed Mill Company Ltd,* Thailand.** Department of Commerce, Aligarh Muslim University, Aligarh.

5. Chavan, Vinay Natthuji. **Marketing of computer software in Maharashtra State.** (Dr P S Rao). Department of Commerce, Shivaji University, Kolhapur.

6. Chavare, Dattatraya Tatyaba. **A study of human resource development in vocational education institutions in Western Maharashtra.** (Dr A D Kurkute), Department of Commerce, Shivaji University, Kolhapur.

7. Chawla, Gita. **Institutional set up for export credit with special reference to E C G C.** (Prof Mahfoozur Rahman), *Department of Commerce, Aligarh Muslim University, Aligarh.*

8. Dixit, Neeraj Kumar. **Adivasi kshetra mein Pradhan Mantri Rojgar Yojana ka mulyankan: Khargaon Jile ke vishesh sandarbh mein.** (Dr Kamlesh Bhandari), Department of Commerce, Devi Ahilya Vishwavidyalaya, Indore.

9. Dubey, Hemali. **Effectiveness of Pension and Group Insurance Scheme of Life Insurance Corporation in India.** (Dr M R Sahu), Department of Commerce, Jiwaji University, Gwalior.

10. *Firdos Ikram.* ***Export promotion of India's agriculture produce: A case study of spices.*** (Prof M Mushtaque Ahmad), Department of Commerce, Aligarh Muslim University, Aligarh.

11. Georgeek, I. **Problems and prospects of readymade garment industry in Kerala.** (Dr Thomas Koshy), Department of Commerce, University of Kerala, Thiruvananthapuram.

12. Jacob, V J. **A study on the lending policy and recovery performance of The Kerala Financial Corporation.** (Dr K B Pavithran), Department of Commerce, University of Kerala, Thiruvananthapuram.

13. Jagannathan, P. **Primary agricultural cooperative credit societies in Andhra Pradesh: An evaluation of financial and accounting aspects.** (Prof K R K Sarma), Department of Commerce, Osmania University, Hyderabad.

14. *Khan, Ashfaq Ahmad.* ***Role of Bombay Stock Exchange in resource mobilisation in Maharashtra State since 1991.*** (Dr S M Imdadul Haque), Department of Commerce, *Aligarh Muslim Unviersity, Aligarh.*

15. Koilakuntla, Maddulety. **A comparative study of implementation of ISO-9000 and QS-9000 quality systems in selected public sector and private sector undertakings.** (Dr V V Khanzode), Department of Commerce, Shivaji University, Kolhapur.

16. Malek, Md Abdul. ***Development of literary prose* during the Saljugi period.** (Dr Sami Akhtar), Department of Commerce, Aligarh Muslim University, Aligarh.

17. Mattihalli, Prajna Ramesh. **Marketing of arecanut through cooperative societies in Karnataka State: A diagnostic study.** (Dr S S Hugar), Department of Commerce, *Karnatak University, Dharwad.*

18. Modi, Vinod. **Indore vikas pradhikaran ka vittiya adhyayan.** (Dr P L Rathore), Department of Commerce, Devi Ahilya Vishwavidyalaya, Indore.

19. Mujawar, Gulnaj Rahim. **A study of the management of the issues leading to girl child acceptance and women atrocities in Kolhapur District: A social marketing approach.** (Dr M M Ali), Department of Commerce, Shivaji University, Kolhapur.

20. Nare, Purandhar Dhanpal. **A study of bakery industry in Belgaum District with special reference to financial and *marketing problems.*** *(Dr C S Shreshthi), Department of* Commerce, Shivaji University, Kolhapur.

21. Perways Alam. **Marketing of urban cooperative bank's deposits in Rajasthan: An analysis.** Department of Commerce, Aligarh Muslim University, Aligarh.

22. *Phadatare, Ramchandra Ganpat.* ***A study of* resettlement of ex-servicemen in Satara District.** (Dr J S Chaudhari), Department of Commerce, Shivaji University, Kolhapur.

23. Pise, Nandkumar Chandrakant. **Performance appraisal and services marketing of Chikodi Urban Cooperative Bank Ltd: A case study.** (Dr V B Jugale), Department of Commerce, Shivaji University, Kolhapur.

24. Potturi, Uma Shailaja. **Marketing aspects of E-Commerce.** *(Prof H Venkateshwarlu), Department of Commerce,* Osmania University, Hyderabad.

25. Rajendran, N. **The Kerala Motor Transfer Workers Welfare Fund Board: An evaluative study.** (Dr J Rajan), Department of Commerce, University of Kerala, Thiruvananthapuram.

26. Rizvi, Saiyed Hasan. **Financial performance of the 14 nationalised banks in India since 1991: A case study of Canara Bank.** (Dr Sibghatullah Farooqui), Department of Commerce, Aligarh Muslim University, Aligarh.

27. Sharma, Renu. **Marketing of services in commercial banks.** Department of Commerce, Kurukshetra University, Kurukshetra.

28. Shyni, Kumari V K. **Management of change vis-a-vis human resource management in the industrial sector in Kerala.** (Dr Gabriel Simon Thattil), Department of Commerce, University of Kerala, Thiruvananthapuram.

29. Siddiqui, Saif. **Role of women enterpreneurs in garment exports: A case study of Delhi State.** Department of Commerce, Aligarh Muslim University, Aligarh.

30. Soni, Sapana. **Madhya Pradesh ke Paschim Nimad Jile mein vibhinn rojgar karyakramon ke kriyanvayan evam prabhav ka arthik vishleshan.** (Dr Satish Chandar Jain), Department of Commerce, Devi Ahilya Vishwavidyalaya, Indore.

31. Sreekantha, R K. **Marketing in non-profit organisations: A study with reference to Karnataka.** (Dr S Ramesh), Department of Commerce, Bangalore University, Bangalore.

32. Sreeramappa, M. **Financial management of state level public enterprises in Karnataka.** (Dr T V Narasimha Rao), Department of Commerce, Bangalore University, Bangalore.

33. Warsi, Mohammad Khurshid. **India's trade relations with Gulf Countries.** Department of Commerce, Aligarh Muslim University, Aligarh.

Economics

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Ph.D Programmes* In the subjects of Biochemistry, Microbiology, Neuro Sciences, Nephrology, Pharmacology, Pathology and Endocrinology

Fellowship Programmes:**

Sl.No.	Name of the Course	Qualification Required	No. of Seats
1	1 Yr. Cardiac & Neuro-anaesthesia	M.D (Anaesthesia)	4
2	1 Yr. Newer Imaging Modalities	M.D (Radiology)	5
3	1 Yr. Sugical Oncology	M.S (GS/ENT)/MD(Gyn)	1
4	1 Yr. Spine Surgery	M.S (Ortho)	2
5.	6 months Spine Surgery	M. Ch. (NS)	2
6.	1 Yr. F/S Rheumatology	MD (GM)	2
7.	1 Yr. F/S Ultra Sonography	MBBS (3Yrs. Exp.)	4
8	1 1/2 Yr. F/S in Critical" Care Medicine	MD (Anaes)	2
9	2 Yr. Sports Injuries & Orthopaedic truma	MS (Ortho)	1
10	2 Yr. PDDC in Cardiology	MD (GM or Pediatrics)	2

* Ph.D Programmes: Those holding individual fellowships from the CSIR, UGC, NET, GATE or any other National funding agency or self funding agency, may apply.

** ***Fellowship /Diploma Programmes:*** *Preference will be given to candidates with one year experience in concerned specialities*

Application form and admission rules can be had from the Office of the Academic Section, NIMS, by sending a **D.D. for Rs. 350/- in favour of the Director, NIMS**, with a **self addressed stamped envelope of Rs.** 35/- Size 11x 25 cms or remitting Rs. 350/- in NIMS Cash Counter (between 9 a.m to 1 p.m and 3 p.m to 5 p.m)

Filled in applications with all necessary documents should reach by 5 PM On or before **24.12.2003**. Applications received after due date will not be considered.

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DIRECTOR

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ANNOUNCEMENT

Special Number of UNIVERSITY NEWS on 'Private Participation in Indian Higher Education: Contemporary Issues and Challenges'

The February 16, 2004 (Vol 42, No. 7) issue of the University News to be brought out on the occasion of XVI New Delhi World Book Fair will be a Special Number on 'Private Participation in Indian Higher Education: Contemporary Issues and Challenges'. The sub-themes identified for the issue are :

- Access and Quality in the Context of Private Participation;
- Legal and Ethical Issues;
- Role of Regulatory Bodies and Policy Perspectives;
- Privatization in the context of Globalisation, WTO and GATS in Indian scenario;
- Private State Universities in India;

The issue will contain articles contributed by Senior Academics from different parts of the World . Readers of the University News are also invited to contribute to the Special Number by submitting papers/articles on above theme and sub-themes by **December 30, 2003**.The papers will be published in the special issue subject to the approval of the Editorial Committee of the University News.

Manuscripts should be sent to:

The Editor, University News
Association of Indian Universities,
AIU House, 16 Comrade Indrajit Gupta Marg
(Kotla Marg), New Delhi 110 002

E-mail: aiu@del2.vsnl.net.in; Fax: 011 - 23232131

6th South Asian Teaching Session on International Humanitarian Law and Refugee Law

This Teaching Session will be conducted jointly by the ICRC and, office of the United Nations High Commissioner for Refugees and the National Law School of India, Bangalore from 12 to 25 May 2004 in the campus of the National Law School, Bangalore. This Session is open to young persons in the field of international law, human rights, international relations and defence studies or persons associated with institutions or organisations dealing with these subjects including officials working with ministries/departments dealing with humanitarian law and refugee issues, who are preferably below 40 years of age. The session will be conducted in English. Although a registration fee of Rs 1000/- is payable by selected candidates, accommodation and meals will be provided to them for the entire duration of the session. Requests for limited financial assistance to cover traveling expenses may be considered. **Last date** for the receipt of application forms with all the required enclosures is **15 February 2004**. For further details and application material either send a self addressed 10"X8" envelope with a Rs. 10/- stamp to our office or email us:

The Legal Office
ICRC Regional Delegation for South Asia
47, Sunder Nagar
New Delhi-110003

Email: new_delhi.del@icrc.org

CLASSIFIED ADVERTISEMENT

Maratha Samaj Seva Mandal's
CHHATRAPATI SHIVAJI NIGHT COLLEGE OF ARTS & COMMERCE, SOLAPUR
101-B, Murarji Peth,
Solapur-413001

(Affiliated to Shivaji University, Kolhapur)

Special Recruitment Drive

WANTED

Applications are invited from eligible candidates for the following post.

Designation	Total Post	Reserved Post
Lecturer in English	1 FT	1 SC (III)

Note :

1. Roman figure in the bracket shows the number of times the post has been advertised.
2. SC candidates who are domiciled outside of Maharashtra State will be treated as Open Category candidates.
3. *SC Candidates are advised to send a* copy of their application to the Deputy Registrar, Special Cell, Shivaji University, Kolhapur-416004
4. A relaxation of 5% will be provided from 55% to 50% of the marks at the Master's Level for SC/ST category, if *candidates with 55% of the marks are* not available.
5. Educational Qualification, Pay Scales and Service Conditions will be as per rules of Shivaji University, Kolhapur. The details regarding educational qualifications will be supplied to the candidates alongwith application form.
6. Those who are already in service should apply through proper channels.
7. Incomplete application will not be entertained.
8. *Apply in the prescribed application* form giving full particulars **within 15 days** from the date of publication of this advertisement to the undersigned. Prescribed application forms can be had from college on payment of **Rs. 15/- by M.O.**

Place : Solapur
Date : 29/11/2003

Principal President

PAYYANUR COLLEGE, PAYYANUR

(Affiliated to Kannur University)

WANTED

Applications are invited for the post of Lecturers in Payyanur College, Payyanur against the existing/anticipated permanent open merit vacancies in the following subjects

1. Botany(1)
2. Zoology(2)
3. Commerce(2)
4. Economics(1)
5. Malayalam(1)
6. Physics(1)
7. Chemistry(1)

Age and Qualifications: As prescribed by the Government and the University

Application forms can be had from the office of the Society on payment of **Rs. 250/- (Rupees Two hundred and fifty only) by demand draft payable to the undersigned at PAYYANUR** along with a self-addressed envelope affixed with five-rupee stamp. Last date for the receipt of filled-in application will be one month from the date of publication of this notification

Payyanur
5th December, 2003.

Sd/-
President
Payyanur Educational Society,
Payyanur - 670 307

JAMIA MILLIA ISLAMIA

(A Central University by an Act of Parliament)
Jamia Nagar, New Delhi-110025

ADVT. NO. 02/2003-2004

pplications on the prescribed forms are invited for the following posts, so as to reach the Asstt. Registrar stablishment Branch-I), Registrar's Office, Jamia Millia Islamia, New Delhi-110025, latest by 16.01.2004.

A. Tenth (X) Plan Posts:

1. PROFESSOR (One) (Rs.16400-22400): Management Studies -01;
2. READERS (Four) (Rs.12000-18300): Sociology -01, Law -01, Management Studies - 01, Architecture -01;
3. LECTURERS (Fourteen) (Rs. 8000-13500) Physics *(Material Sc.)* -01 (for ST), Geography-01, Bio-Science-01 (for SC), Computer Science-01, Management Studies *(With Computer)* -01, MCRC-04 *(one each in (i) Radio (ii) Video (iii) Film (iv) General with experience of traditional media and script writing* -reserved for SC)', Architecture-02, Computer Engg.-03 *(one each in (i) Computer Engineering (ii) Computer Architecture and (iii) Mobile Communication;*

B. Non-Plan Posts:

1. PROFESSORS (Five) (Rs.16400-22400): # Bioscience-01, Geography-01, Sociology-01, Adult & Cont. Edu. and Extn.-01, (Film)-01;
2. READERS (Eight) (Rs.12000-18300): Mech. Engg.-01, Persian-01, English-01, Education (In-Service)-01, Computer Sc.-01, Mathematics-01 Social Work-02;
3. LECTURERS (Seven) (Rs. 8000-13500): English-01, #Computer Science-01, Sociology-01 (for ST), Psychology-02 (one for ST), Computer Engg.-01 (for SC), Civil Engg. -01 (for Disabled person -Univ. Poly).

(i) # Desirable Specialization for Biosciences Professor:
Biophysics/Immunology/Molecular Biology/any other relevant area of Modern Biology
(ii) # Desirable Specialization for Lecturer in Computer Science:
Computer Networks and Mobile Computing.

C. MMAJ-Academy of Third World Studies:

1. One Reader (Rs.12000-18300) (South Asia) -*Politics and Development Studies in SAARC countries:*
2. One Reader (Rs.12000-18300) -*International Law, Human Rights and Minorities rights:*
3. One Lecturer in (Uzbek) (Rs. 8000-13500) *(Candidates with MA in Political Science/History/Sociology with Diploma in Uzbek may also apply)*

D. Other academic/teaching posts:

1. One Director (Rs.16400-22400), Academic Staff College *(Till the project lasts);*
2. One Research Scientist (Rs. 8000-13500) (leave vacancy), MCRC;
3. One Evaluator (Urdu) (Rs 5500-9000), Urdu Correspondence Course;
4. One Instructor (Rs. 5500-9000)- Interior Decoration, TT & NFE (IASE);

NOTE:

1. Selection against leave vacancy shall not confer on the appointee any right of permanent appointment/ regularization.
2. The Jamia reserves the right to evolve a uniform and reasonable criterion for short-listing of eligible candidates, if needed.
3. Candidate must enclose the attested copies of degrees, diplomas and mark-sheets etc. giving reference of experience/published work with application form.
4. Incomplete application or application on plain paper will not be entertained. **The University will not be responsible for any postal delay in case of receipt of application forms and issue of interview letters.**
5. Reservation exists in the University as in accordance with law.
6. Relaxation, if any, shall be as per the UGC guidelines.
7. Number of vacancies, its nature indicated above may vary at the time of Selection Committee.
8. Candidate already in service must apply through proper channel.
9. Knowledge of Urdu is a desirable qualification for all non-teaching posts.
10. For any of the above technical posts, selection may be made after practical test and interview in the Lab./Discipline.
11. T.A. will be paid to SC/ST candidates called for attending the interview as per rule.

The prescribed application forms together with the detailed qualifications as per UGC/AICTE/NCTE/COA/JMI guidelines can be had from the Assistant Registrar (Establishment Branch-I), Registrar's Office, Jamia Millia Islamia, Jamia Nagar, New Delhi-110025, during working days between 10.00 A.M. & 01.00 P.M. either personally or sending a self addressed envelope with stamps worth Rs. 20/- Ordinary post) *and* Rs. 30/- *(Registered post)* with a payment of Rs.50/- (Rupees 20/- for SC/ST). The amount should be paid in cash on counter or through IPO/DD, drawn in favour of Jamia Millia Islamia. The application form may also be downloaded from our Website address **http://jmi.nic.in** *and submitted along with fee of* Rs.100/- *through* Bank Draft.

Dated: **10.12.2003**

(Prof. Zahid Husain Khan)
Offg. Registrar

NATIONAL LAW SCHOOL OF INDIA UNIVERSITY
NAGARBHAVI, BANGALORE-560072

Telephone : 321 3160; 321 1303; Fax No.080-3217858

NOTIFICATION

ADMISSION TO THE UNDER-GRADUATE B.A.LL.B.(HONS.) AND POST-GRADUATE (LL.M.) PROGRAMMES FOR 2004-2005 SESSION

The National Law School of India University (NLSIU) is the premier residential law University in the country. Applications are invited for admission to Under-graduate and Post-graduate programmes for 2004 - 2005.

Under-graduate Programme B.A.,LL.B.(Hons.)

The University offers a five-year Integrated B.A.,LL.B.(Hons.) Degree Programme preparing students for the Bar and varied other careers in Law.

(a) **Eligibility:** 10+2 School Examination or equivalent with not less than 50% marks (students taking qualifying examination in March/April 2004 are also eligible to apply);

(b) **Age Limit:** Below 20 years as on 1st July, 2004 (22 years in case of SC/ST candidates);

(c) **Intake and Reservation:** The intake is 80 with reservation of 15% for SC and 7 ½% for ST candidates.

(d) **Financial assistance /fee waiver / Scholarship is available in deserving cases.**

(e) Copies of the last 16 years Test Papers in a volume are available. The same can be obtained by sending a Demand Draft for an amount of Rs. 580/- inclusive of postage. However, the format and the structure of the entrance examination vary significantly from previous years.

***Post-graduate Programme* (LL.M.)**

LL.M. is a two year Post-graduate Degree Programme (4 semesters). Specializations in the area of Business Laws and Human Rights Laws are offered at present.

(a) Minimum qualification is 50% aggregate in B.L/LL.B./B.A.LL.B.(Hons.) Examination.
Candidates appearing for final examinations this year, are also eligible to apply.

(b) **A few merit-cum means Scholarships are available in deserving cases.**

(c) Copies of the last six years test papers are available. The same can be obtained by sending a Demand Draft for an amount of Rs. 320/- inclusive of postage.

(d) **15% seats for SC and 7 ½ % for ST are reserved in these two specializations.**

Admissions for the above **Two** programmes are based purely on merit, assessed at the All India Admission Test to be held on Sunday, the 2nd May, 2004 at Bangalore, Chennai, Delhi, Mumbai, Kochi, Hyderabad, Kolkatta, Allahabad and Chandigarh. All admissions will be completed on or before 30th June. Classes begin on 1st July, 2004.

For Application and Prospectus, write to the Registrar giving full address with Pin code and the course for which *the application is required with a* ***Bank Draft for Rs.600/- payable to the NLSIU at Bangalore****. The envelope must* be superscribed by writing in BOLD LETTERS, the appropriate course for which the application is required. Applications will be issued from 2nd January, 2004. Last date for receipt of completed Applications is **15th March, 2004**

Admissions to the Distance Education Programmes and other Post-graduate programmes will be advertised separately. Visit our **Website http://www.nls.ac.in** for more information.

REGISTRAR

Published by Dr. Sistla Rama Devi Pani, on behalf of the Association of Indian Universities, AIU House, 16 Comrade Indrajit Gupta Marg (Kotla Marg), New Delhi-110 002. Grams: ASINDU. Phones: 23230059, 23232429. Fax: 011-23232131. E-Mail : aiu@del2.vsnl.net.in, Website : http://www.aiuweb.org